# GRUMMAN plane news

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## Readying Tomcat No. 1-X for high-speed test work

Flight time nears for two Tomcats.

No. 1-X, the high-speed aircraft, is scheduled to make its first flight this week, according to team leader Tom Gillen, with the possibility that 1-X might fly before this issue of Plane News went to press.

Basically, the role of 1-X is fast flight—"to see what the plane can do," says Joe Hannan, F-14 flight test manager.

Tomcat 2 should also fly very soon, perhaps in just a couple of days. Of course, No. 2 has flown. Team leader Kurt Hofmann says it's had "36.7 flight hours. It's in layup now for scheduled system installations."

The two primary flight-test installations are the EPU (Emergency Power Unit), a back-up system for electric and hydraulic power, and the "stall chute," which can be used to help stabilize the aircraft in the unlikely event of an uncontrolled spin during stall tests.

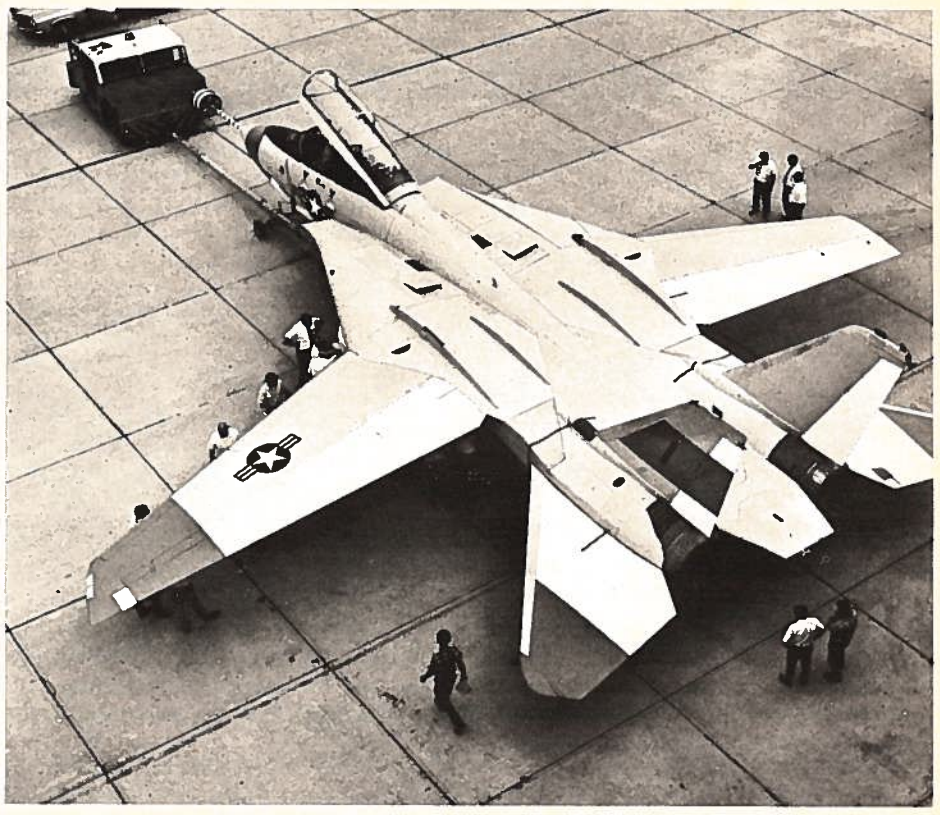
The mechanism is rigged so that the pilot can deploy the chute whenever he believes he may not be able to bring the plane in following a stall.

Unlike 1-X and the other Tomcats, No. 2 has no "sweep" capability. That is, it flies as a fixed-wing aircraft. Therefore, it is a slower plane than the other Tomcats.

In about a month, Tomcat 4 is to be flyable. It's now in the build-up stage at Calverton's Plant 7, where it's being cared for by team leader "Deac" Jones. This Tomcat will be completely wired so that it can be ready to take on all the black boxes at Point Mugu, where it will be tested in SITS (System Integrated Test Station).

However, No. 4—one of two electronics-system aircraft to go to Hughes Aircraft for testing of the AWG-9 missile system—cannot be flown to Point Mugu until it's gone through at least 10 hours of flight tests at Calverton. The big flight to the West Coast is scheduled for late October.

Then there's Tomcat 3, to be moved from Plant 5 out to Calverton. Jim Farrell, team leader, feels that structural calibration tests will be completed today. So No. 3 could be riding eastward by September 3.



**Bird waiting.** On the hangar apron at Plant 7 sits Tomcat 1-X, being groomed for its first flight. Mission: high-speed testing. Tomcat 2, the low-speed aircraft which has 36.7 flight hours on it, is also being readied to resume its flight test program. (Photo by Gerry Costello)

## *Inouye: need reasoned dialog, realistic policy to cure defense ills*

"Those who believe that yesterday's fighters will survive in the present-day environment of the Soviet's Foxbat are deluding themselves through their exaggerated concern with cost. That concern has also caused them to view the aerospace industry as the culprit. . . . and has resulted in a search for unreal solutions to very real problems."

The words are those of Sen. Daniel K. Inouye of Hawaii, who spoke in the Senate recently in defense of the aerospace industry and some of its major employers, primarily Grumman.

Sen. Daniel Inouye

Senator Inouye spoke of both the industry's achievements and its current woes, of its potential and its decline. He spoke of inflation, unemployment, cut-backs in funds. Most important, he spoke of the industry's paramount role in securing peace:

"I am not yet ready," he declared, "to abrogate our Nation's security."

### Dynamic industry

The Senator began by deploring recent actions and outlooks concerning the industry. He said we "agonized over the fate of the supersonic transport program. . . . We have agonized over the future of the Lockheed Co. . . . " Both were confronted by financial crises. And the agony led to large-scale unemployment.

"Now," he said, "we appear to be training our guns on yet another of our major producers—the Grumman Co.—who, among other things, built the lunar module for the Apollo program and the F-14 fighter for the U.S. Navy.

"I cannot help but wonder — with some uneasiness—who is going to be next."

He then spelled out his concern in terse language:

"The aerospace industry represents one of the largest and finest pools of scientific, technical, and managerial expertise to be found anywhere in the world. I think the industry's record of achievement, from such things as Lindbergh's Spirit of St. Louis to Jim Lovell's lunar module Aquarius, speaks for itself. In brief, I believe that any industry that has bridged the technological gap from man's first crude powered flight to interplanetary travel, in less than seven decades, has to be one of the most capable and dynamic industries ever developed."

The Senator continued:

"As for potential—a far more important point—I believe that the widely diversified capabilities which exist in the industry today are ready for application to nearly every major problem we presently face—whether they be in the transportation, housing, ecological, defense, space, or management fields, if we have the foresight to apply them properly.

"It is, in its collective ability, one of America's most precious resources, and yet the record is full of statistics which attest to the industry's decline. Sales fell off $5 billion between the end of 1968 and the end of 1970, and it is estimated that 1971 will see a further drop of nearly $2 billion.

"Nearly 300,000 jobs were sacrificed in 1970, and it looks like another 65,000 to 70,000 skilled workers will be released before next December. The industry's unemployment picture is catastrophic—not only economically, but because it is also being forced to sacrifice a substantial percentage of the talented team of workers it had taken so long to organize and train. . . . "

Senator Inouye observed a paradox: that while trying to compete abroad, many fine aerospace companies may go under.

### Unrealistic schedules

One of the reasons for this strange situation, noted Senator Inouye, is that product performance has taken a back seat to **product costs.** And he remarked:

"This concern over the cost of defense products underlies the most recent attack on the Navy's new F-14.

"Grumman entered into that contract during the 'hey-day' of Defense Secretary McNamara and—under the procurement system of that time—was compelled to agree to prices and delivery schedules six to eight years in advance of production commitments by the Government.

"Today . . . one of the most important forecasts under which the contract

*(Continued on page 12)*

# AD team: their todays help shape our tomorrows

If being a step or two ahead of the competition is "the name of the game" today, then a place to look is the multifarious region called Advanced Development (AD). Just a peek or two is convincing. For example:

"It was five or more years ago that an advanced composite group took shape in Advanced Development, and its first project was to fabricate a boron-epoxy wing-tip extension for the F-111. The fruits of that effort led to the development of the boron-epoxy horizontal stabilizer that's now part of the F-14 Tomcat."

Those simple and direct words from Dick Hadcock, who's managing that AD program, both illustrate and demonstrate what AD is all about at Grumman—a continuing push to go well beyond "the state of the art," in many fields. In addition to innovative work there is another facet of the job; that of looking for new avenues of business.

According to Bob Bower, who is leaving his post this month as director of AD to become director of Aeronautics at the NASA-Langley Research Center, this "selling" phase of AD work "has become increasingly important during the 11 years I was with AD. Roughly 60 percent of our solicited and unsolicited proposals have been accepted, and have led to money for the Company. As an example, during the past 12 months we have won 60 contracts totaling $8 million. Th money likely to flow from these door-opener efforts is anybody's guess, but there should be fine rewards for the Company. After all, Grumman is known in the aerospace industry as the leader in many technological fields."

One of these fields is heat pipes, where Fred Berger is manager of AD in Vehicle Technology. "Actually, thermal control of space vehicles is the over-all designation for the kind of work we're doing," says Berger. "In sum, it's a new device to transfer heat energy from one location to another. Heat levels remain then nearly constant over the **entire** surface of a structure. The pipes have significant advantages: They're light in weight, need no liquid pumping devices, and can be made in a variety of shapes (though they're usually small in diameter).

"Most of our work has concentrated on ambient heat pipes where the typical temperature levels have ranged from -60 to +150 degrees Fahrenheit," Berger says. "The pipes have been used in the telescope housing of the OAO (Orbiting Astronomical Observatory). Here the electronics produce heat in the OAO. This heat must be distributed uniformly to the structure to avoid structural distortions."

### No 'pipe dream'

The whole idea of heat pipes is fairly simple (according to Berger). He says that essentially it consists of a closed pipe (or chamber) with a wicking structure; a volatile liquid is inside; it turns to vapor as it moves to the other (cool) end of the pipe and condenses (or liquefies), and the whole process is repeated as it goes to the other end of the pipe by capillary action in the wick. That it's no pipe dream has been proved in the OAO experience ($280,000 for OAOs 3 and 4). And there are other contracts, including one involving the space shuttle orbiter and another involving pipes aboard a sounding rocket, as examples.

As Berger put it, "We're regarded as a leader in heat pipe technology in the country."

Also related to the space shuttle program is an AD group headed by Walt Ludwig, manager of Shuttle Technology. There are two main tasks there: development of heat shields, one metallic and the other non-metallic, to withstand the heat of re-entry; and the other is cryogenic tankage. "We're testing several metallic heat shields for the orbiter and the booster," Ludwig says. "With the orbiter, we want to use titanium and aluminum—light metals—for the lower heat levels, and since only about 10 percent of the shuttle will be exposed to temperatures in the 1,900-degree F. range we're experimenting with a cobalt-base super-alloy, Haynes 25.

### Re-entry material

"In the non-metallics, we're working with the Research Department on a waterproof brick-like material that's a by-product from smokestacks. Mixed with cobalt oxide and fired, it's molded into insulation blocks for re-entry purposes."

In the area of cryogenic tankage, Ludwig's crew are developing structural concepts to cope with the unusual temperature difference between the thermal protection system on the outside wall (500 degree F) and liquid hydrogen (-432 degrees F) on the inside wall. They are also working on overwrapped tank concepts to improve fatigue life.

Like the work being done in Berger's area of responsibility, these are proceeding under contract.

Sticking for a while to shuttle-oriented AD work, Dick Hadcock's group is also engaged in making and testing elements of a one-third-scale booster thrust structure. Done under the aegis of the Marshall Space Flight Center, findings indicate that this study (which resulted from a 1970 Grumman design effort) could yield an over-all weight saving of about 28 percent. Moreover, test performance has been 120 percent of ultimate strength. The composite material is comparable in strength to high-grade steel—at ¼ the weight!

"All this is just the beginning," remarked Artie August, who will succeed Bower as director of AD. "Take Tony Romeo's domain, fluidics, a name derived from **fluid** and **logics**. The basic parameter here is fluid pressure." According to Saul Pasik, "the process is analogous to electronics . . . **but** in fluidics we're limited to the speed of sound. Fluidics supplements electronics. The beauty of it is that we gain effective control while consuming a minimum of power because we use liquids and gases. Fabrication and maintainability are virtually no problem because of the absence of moving parts. I guess it can be called 'the simple machine,' and those of us working in fluidics see a mushrooming field of applications just ahead. We are now working under a Navy contract."

A vast multitude of applications also looms on the horizon for the Materials and Processes area where Carl Micillo's AD group are hip-deep in such projects as laser cutting, ultrasonic drilling, close-tolerance titanium forging, diffusion bonding, graphite-epoxy fabrication, etc. Micillo says that laser cutting of such hard metals as titanium can be accomplished at a rate 30 times faster than by friction sawing. "The F-14A wing stringers are now being looked at. Maybe they'll make good laser-trimmed parts.

### Industry first

"'We now have five portable ultrasonic drilling units, too, and for the first time in the aerospace industry, they're doing production jobs on titanium—and doing it at three times the rate of conventional drilling.

"One of the big recent advances affects close-tolerance titanium forgings for the F-14. It used to be that you started with an 80-pound piece of titanium to get a finished forging of 10 pounds. At $6 a pound, that was quite expensive. Now, under Navy contract, we are using sintered pre-forms (a non-porous mass molded by heat without melting), and only a 20-pound piece

*(Continued on page 10)*

**Shuttle talk.** **Walt Ludwig (L) talks with the new and the retiring director of Advanced Development, Artie August (C) and Bob Bower, respectively, about a new closed-pore insulation made by Grumman's Research and AD departments. (Photo by Harry Prodromides)**

## NASA bound

After 22 years of service at Grumman, personable and soft-spoken Bob Bower has pulled up his stakes as director of Advanced Development to become director of Aeronautics at the NASA-Langley Research Center.

His work is cut out for him. As Aeronautics director at the Research Center he'll head up 40 percent of its activities. His responsibilities will include research aircraft flight, high-speed and low-speed aircraft, and hypersonic vehicles.

A graduate of Rensselaer Polytechnic Institute in Troy, N. Y., he began as an engineer, became assistant to the Chief Technical Engineer and, later, Chief of Engineering Development. For the past seven years he's been director of Advanced Development. He has made original contributions in the fields of non-linear supersonic flow analysis, supersonic inlet design, and thrust augmentation.

Pete Oram

Tom Merritt

Paul Butler

Pete May

Al Hall

Phil Vassallo

# Appoint six to key operational posts in Company

In recent weeks, six men have received key appointments in plant management of Product Operations and the F-14 Program.

Pete Oram, who returned in June from Massachusetts Institute of Technology, where he spent a year as a Sloan Fellow, is now in the slot of Program manager on the F-14. He reports to Vice President Mike Pelehach, F-14 Program director. Oram's pre-M.I.T. posts were director of Contracts and deputy director (finance) on the F-14. Oram is now in Plant 1, Ext. 3650.

For this new responsibility, Oram has accumulated a lot of administrative experience since coming to Grumman from the Air Force in 1959. He started in Correspondence, moved in '61 to Contracts as assistant administrator on the A-6A and then became contract administrator on the E-2.

Beginning in 1963 he was business manager of the E-2A/C-2A. In 1966 he transferred to Product Support, also as business manager, supervising the Support Contracts and Manpower Planning and Control groups. He became assistant director for Aircraft Programs in Contracts, and as such was Contracts manager for the VFX Proposal and then for the F-14 Program. Oram was named director of Contracts in late '69.

He and his wife have two daughters and they live in Huntington.

### Merritt at Plant 1

Tom Merritt, director of Calverton Operations since last spring and formerly manager of Grumman's Savannah Facility, Plant 55, has been appointed general manager of Plant 1. Paul Butler has been named Calverton manager and Joe Walker, assistant Calverton manager.

Merritt will also be Product Manufacturing manager of the F-14, responsible for the F-14 Manufacturing effort in all plants. As general manager of Plant 1, he is responsible for all Product Manufacturing functions within that plant. His office is there, and he can be reached on Ext. 3005. He reports to Vice President Tom Johnson of Product Manufacturing.

Tom Merritt is a graduate of the University of Georgia, with a Master's degree from George Washington University. He's also a graduate of the U.S. Naval War College and the U.S.M.C. Amphibious Warfare College. As a Marine flyer in World War II, he flew many kinds of aircraft, saw service in the Pacific, and later, in Korea and in Vietnam. He holds the rank of colonel.

Since coming to Grumman in 1968 he has been in executive posts on the A-6B and in Aircraft Production Manufacturing. He and his wife live in East Setauket.

### New Calverton manager

As the new manager of the Calverton Facility, Paul Butler will be responsible for managing and coordinating the efforts of all functional departments there to insure the most effective operation of that facility. He reports directly to Corky Meyer, Senior Vice President, Product Operations. He is in Plant 7 on Ext. 57-462.

Butler has been deputy director of Calverton Operations since March, and just preceding that assignment, he spent five months as manager of Operations for Electron Beam Welding and Titanium Forming activities in Plant 2.

During 24 years with Grumman, Butler has been where the action is: 12 years in Flight Test, a busy tour in Business Development, two years as assistant director of Government Flight Acceptance for all tactical aircraft. He became director of LM-2 in the fall of 1967. The next year he became director of Spacecraft Assembly and Test and in 1969 became staff to Senior Vice President Corky Meyer.

The Butlers, who have seven children including two sets of twins, make their home in Bellport.

### May has wide experience

Since Farmingdale days, Pete May has been working for Grumman; yesterday, August 26, was his 36th anniversary with the Company. His new title is general manager of Plant 27 in Wyandanch, responsible for all Product Manufacturing functions within Plant 27. Bob Hieter is appointed assistant general manager. They report to Vice President Tom Johnson. Their phone extensions, in Plant 27, are 1904 and 1905 respectively.

May's history with Grumman parallels its aircraft. As assembler, leadman, foreman, and in other supervisory capacities he has worked on the J2F, TBF, F4F, F6F, F8F, F9 series. He was supervisor of Sub-Assembly on the F9F and F11F, foreman on the S2F-1 and -3, supervisor on the C-2A.

In October of 1963 he became assistant manager of Plant 27, and in '66, plant manager. In his new assignment he oversees the forward, mid, and tail assemblies of the A-6E and EA-6B, and all fiberglass and plastic work for all the Grumman aircraft. He lives in East Islip with his wife Jean.

### Hall heads Detail Parts

Al Hall, who has been director of Machining Operations the past two years, is named director of the Detail Parts Department. Jack Gillies is deputy director, and the two will be responsible for all the functions that support the manufacture of Detail Parts. They are based in Plant 2 and their phone extensions are 1854 and 1853, respectively.

Hall has been with Grumman since 1963, beginning in Systems Analysis Engineering. He had been 24 years with the Navy, flying F4Fs and F6Fs during World War II and later, F9Fs, F11Fs, and A-6As. Following his first assignment at Grumman, he moved to Business Development on the A-6A and then became staff assistant to Senior Vice

*(Continued on page 10)*

## Holiday ahead

That time again.

"All plants will be closed on Labor Day, Monday, September 6, and all personnel actively employed will be paid for that day," according to an announcement from President Bill Zarkowsky.

Plane News will be distributed Monday, September 13, instead of Friday, the 10th. Enjoy yourselves.

## Security memo

In a recent letter to Grumman Board Chairman Clint Towl, Brigadier General Louis J. Schelter Jr., Commander of the Defense Contract Administration Services Region in New York, requested the Chief Executive Officer's **personal** attention to an increased emphasis placed on adherence to the procedures set forth in the Department of Defense **Industrial Security Manual.**

As part of that program a special emphasis has been placed on our participation in a nationwide effort to reduce the number of personnel security clearances authorizing access to information with a defense classification of TOP SECRET.

Long recognizing the importance of the Industrial Security Program to the Nation and to the corporation engaged in the development of defense systems, Mr. Towl directed me to proceed immediately with a review aimed at meeting all aspects of the requests.

Bill Zarkowsky, President of Grumman Aerospace Corporation, received a similar letter and joined Clint in confirming that measures of this nature are essential to the national interest and have his personal endorsement. Clint further remarked that General Schelter has made it very clear that this action in no way reflects adversely upon the corporation or upon any individual employee.

### Full cooperation

The Corporate Security staff is proceeding with the full cooperation of the chiefs of the functional departments, who are examining the requirements of their individual operations as they are affected by the directed review. While controls voluntarily imposed by the Company in the past have limited the number of TOP SECRET clearances, some progress has already been made on a selective basis in changing clearances where assignments no longer require access at such a high level.

Clint and Bill have told General Schelter that we are proud to have been selected three times by the Navy and the Department of Defense for special recognition as leaders in the proper and economical application of security regulations and that our continued cooperation can be expected. They went on to say that our review would extend to continued careful examination of future personnel clearance requests for access to all the various levels of defense information.

G. Tom Rozzi

**G. Tom Rozzi**
**Director of Security**

# LanFranco fattens bank account with idea to trim production time

Did you earn your share of the more than $55,000 in U.S. Savings Bonds distributed last year in recognition of time-saving, money-saving ideas to improve Company operations? Think a lot, and you may find yourself among the elect, the winner of a sizable award to help the kids go to college or to buy a new sailboat. The Employee Suggestion Office stands ready to reward you.

Well, things were a little quiet during May-June-July, with few world-shaking ideas to review. However, Grumman dealt out $9,525 in bonds, including $100 to Eleanor Scott of Tool Fabrication, Plant 2, and $50 to Marie Collyer of Grumman Data Systems, Grumman Data Center. The rest of the brainpower came from the male side.

Jimmy LanFranco of Small Parts Fabrication, Plant 3, topped the May-July winner list with an idea "that wasn't supposed to work, but it does." He got $475 in Savings Bonds for it.

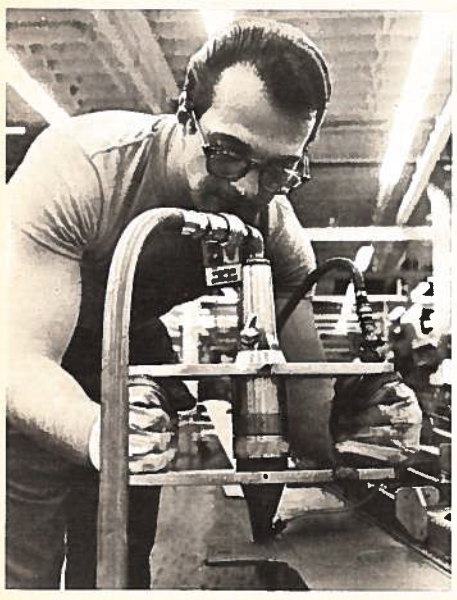
LanFranco works on titanium wing panels and stringers for the F-14, and as almost everyone knows, titanium is still a "cantankerous" metal. In the process of being trimmed, it was wearing out diamond-tipped saws "by the dozen" and testing the patience of everyone in the department.

### All-around mechanic

LanFranco had been using a Quackenbush router and Dixie carbide cutter on stringers for the wing and had found them satisfactory for this. So, in the interest of getting the trimming done right, at a saving of time and tools, he cut down the speed on the Quackenbush and attached a line to the router tip to feed Freon coolant to the Dixie fiberglass cutter.

"It used to be a pretty long job with the saw; now we just put the router on once, cut, and take it off," says Jim.

LanFranco, now 31 years old, has been with Grumman for seven years and is highly regarded as an all-around mechanic. "Put him on almost any job and he can take care of it," says Tom Palmeri, his foreman. Before he came to Grumman, LanFranco was a sheet metal mechanic in commercial and industrial air conditioning.



*Heads suggestion winners*
**Jimmy LanFranco**

He, his wife, son James, 6½, and Diana, 8, live in South Farmingdale; and his idea of a fun vacation is to go hunting small game at Montauk. He has a workshop that can turn out whatever might be needed for the house, like a picnic table and benches, and Jim can be seen on pleasant summer lunch hours joining co-workers in a round of weight-lifting north of Plant 3. Any plans for cashing in $475 in Savings Bonds? No, he's going to let them rest in the bank for the present.

The next highest award, $450, has been paid to James Getty, formerly of Tool Fabrication, Plant 2, who no longer is with Grumman. His suggestions for improving the manufacture of engine stands for the C-2A saved an estimated $4,620 in the past year.

Other awards were:

$350: Steven A. Samuels, Instrumentation, Plant 5.

$325: Ted Wiegardt, Tool Fabrication, Plant 11A; Henry Mysiborski, Avionic Instrumentation, Plant 6; Raymond Varady, Flight Avionics, Plant 6.

$300: Vincent Buffa, Inspection, Plant 5; Arthur J. Falbush, Materials & Processes, Plant 12; Arnold Higgins, Final Assembly, Plant 55; Gustavo L. Hudo Jr., Final Assembly, Plant 3; Angelo A. Petrone, Final Assembly, Plant 3; John P. Pekar, Fiberglass, Plant 27.

$225: William Moloney, Upholstery, Plant 36; William Rutherford, Machine Shop, Plant 56; Anthony Viorritto and Louis Giani, both Upholstery, Plant 36.

$200: Raymond N. Konfino, Flight Acceptance, Plant 6; Walter Pytlowany, Structural Test, Plant 5.

$150: Donald Buchheim, Prototype, Plant 2; Peter S. Kraus and Serafino C. Carillo, both QC Labs, Plant 10; Robert H. Boudreau and Henry J. Fernandez, both Hydraulics, Plant 2; Gordon Cargill, Support Engineering, Plant 33.

$125: Ronald Heuer, Structural Test, Plant 5; Albert Schmidt and Frank Fiorentin, both Machine Shop, Plant 3.

$100: Mark Sheppard, Configuration Data Management, Plant 1; Gerald L. Groothouse, Machine Shop, Plant 3; William R. Schlosser, Requirements Planning, Plant 30; Eleanor Scott, Tool Fabrication, Plant 2; Richard C. Byrnes, Sub-Contract Management, Plant 15; Joseph S. Kost, Support Engineering, Plant 34; Joseph N. McLaughlin, Configuration Data Management, Plant 1; John Morrison, Vehicle Engineering, Plant 1; Charles Connors, Development Engineering, Plant 1; Frank Newsham, Fiberglass, Plant 27; Alfred H. Sontag, Instrumentation, Plant 5.

$75: Joseph Gabriel, retired; August Nigl, LM Propulsion, Plant 2; Robert LoBozzo and Dennis Treutlein, both S/CAT Engineering, Plant 25; Dominick Rullo and John Menell, both Steel Parts Assembly, Plant 2; Harold Sherwood Jr., Fiberglass, Plant 27.

$50: John Tiano and Roland Vagoun, Support Engineering, Plant 34; Henry Gage, T/M Engineering, Plant 3; Edward Jacobs, Accounting, Plant 30; William Kotzky, Istrument Fabrication, Plant 12; Ronald Lauer, Manufacturing Shops, Plant 83; John Transue, Final Assembly, Plant 1; Nelson K. Bolton Jr., Final Assembly, Plant 3; Irving Barnowsky, Measurement Standards, Plant 12; Frederick Appleyard, Facilities Maintenance, Plant 13; Robert Riehl, Support Engineering, Plant 4; Raymond Rupp, Tool Fabrication, Plant 11; Robert Gemmell, Support Engineering, Plant 34; Tom Cenis, T/M Engineering, Plant 3; Kenneth Dale, Receiving Inspection, Plant 24; Marie Collyer, GDS, DSC; Henry Kupsch, Inspection, Plant 2; William Mytko, Final Assembly, Plant 1; Richard W. Lewis, Quality Control, Plant 83; Harry J. O'Brien, Measurement Standards, Plant 12; Joseph J. Svach, Management & Control, Plant 56; Malcolm D. Flack, Systems Engineering, Plant 1; Larry Frank, Support Engineering, Plant 34.

$25: Jack Amann, Tool Fabrication, Plant 16; Peter Mirabella, Tool Fabrication Plant 2; William Walker, Plastics, Plant 27; Peter Bergeman, Tool Fabrication, Plant 16; Sam Bryant, Plastics, Plant 27.

**Dress rehearsal.** **Consulting pilot Glenn Kingsley (he's the man in the white suit) shows an interested Representative John Wydler of Garden City how Apollo space suit operates. Congressman Wydler visited Bethpage recently to get updated on Grumman space activities. (Photo by Fred Annette)**

# GAA lists dates for hobby, art shows

You, there, with the grandfather's clock you made, or the scale model of Intrepid, or an afghan in six delicious colors: The Grumman Hobby Show, sponsored by the Grumman Athletic Association, is just over the horizon. Make a note.

The Hobby Show is to be held in Plant 28 Auditorium, with GAA staff receiving entries Monday to Wednesday, October 18-20, 4-6 p.m. The show will be judged Thursday morning, October 21, and the awards will be presented Friday noon, October 22. Bring your friends and families 4:30-7 p.m. October 21 and 22 and on the weekend.

The Art & Photography Show is scheduled for November. Entries will be received Monday - Wednesday, November 8-10, and the show will be open for viewing Thursday-Sunday, November 11 - 14.

For information, call GAA, Ext. 2133 or 2269.

# Polo benefit

If you want to see a polo game **and** help a cause, Pete Mulieri of Grumman Data Systems Scientific Application, Plant 15, has the answer. He would be happy to receive your donation of $1.50 for a game scheduled for Saturday, September 11, at 1 p.m., Hickok Field in Old Westbury. Mulieri is especially interested in the benefit, which is for Cooley's Anemia Blood & Research Foundation for Children: his son, Michael, 11, has it, and so far, a cure has not been found.

You can reach Pete on Ext. 84762.

plane GRUMMAN news

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## Gulfstream future V/STOL ?

Looking into the 1980s with the National Aeronautics and Space Administration, Grumman has teamed with North American Rockwell on a $475,000 contract to conduct a study for NASA-Ames on the practicality of developing a Gulfstream II as a V/STOL research aircraft, reports Bill Fehrs, director of Commercial Aircraft Programs.

NASA has a continuing program going on in aircraft research as well as in space. It is looking at modification of existing aircraft to see if the aircraft can provide useful research that would accelerate the realization of V/STOL lift fan commercial short haul transport. The Gulfstream II is a candidate research vehicle. Boeing has a contract, too, and so does McDonnell Douglas; they are engaged in parallel development studies with other aircraft models.

Grumman's study will investigate what would need to be done, to the Gulfstream structure and systems, to be able to install four, and possibly even six, GE-designed lift fan engines, replacing the present Rolls Royce Spey engines. The Grumman study will be conducted in the Commercial Aircraft Program department with John Swenk as project manager. After a year, NASA will decide which research study seems most promising for further development of vertical takeoff and landing.

## Boys will be boys

There has been a new twist to the sometime pastime of girl watching at Plant 5. The boys who watch girls there came up with a monthly award to the one they consider most attractive. And three girl watchers from Operational Data Systems (who will remain nameless to protect the innocent) bestowed their first "Most Attractive Girl Award" to Mary Ann Silz, dutifully signed by three judges of the Plant 5 Girl Watchers Association. One of the group thought the idea should be extended to all Grumman plants but he was quickly voted down. They think they got a good thing going—let the other guys come up with their own new wrinkles.

## Sales, earnings slip

A general downturn in the aerospace business was reflected by a dip in sales and earnings of Grumman Corporation for the first half of 1971.

Net earnings for the six months ended June 30, 1971, amounted to $9,397,562 or $1.35 per share represening a decrease of 10% from earnings of $10,447,543 or $1.49 per share for the comparable period in 1970. Sales and other income for the first half of 1971 totaled $442,365,606, a decrease of 15% from the $517,761,293 recorded for the first six months of 1970.

The decline in sales was due primarily to a reduced volume from the Lunar Module program, the phasing out of the F-111 program, fewer deliveries of the Gulfstream II, and reduced volume in the Army Mohawk program for which production of new aircraft was completed in 1970.

Although earnings of Grumman Aerospace Corporation improved slightly over the first half of 1970, the reduction in overall earnings was attributable principally to start-up costs and new product and systems development costs generated by other subsidiaries of the Corporation; namely, Grumman Data Systems Corporation, Grumman Ecosystems Corporation, and Grumman Allied Industries, Inc.

**DIVIDENDS**

Dividends paid throughout the first six months of 1971 amounted to $.50 per share.

| | 1971 | 1970 |
|---|---|---|
| Sales and other income | $ 442,365,606 | $517,761,293 |
| Income before taxes | 17,397,562 | 19,547,543 |
| Provision for Federal income taxes | 8,000,000 | 9,100,000 |
| Net income | 9,397,562 | 10,447,543 |
| Primary shares outstanding* | 6,986,008 | 7,008,746 |
| Earnings per share: | | |
| Primary | $1.35 | $1.49 |
| Fully diluted | $1.23 | $1.35 |
| Backlog** | $1,060,000,000 | $823,000,000 |

**OTHER FINANCIAL DATA (As of June 30)**

| | | |
|---|---|---|
| Working capital | $ 136,386,284 | $107,597,531 |
| Net property, plant and equipment | 125,068,909 | 133,270,679 |
| Shareholders' equity | 174,117,112 | 161,561,829 |
| Shareholders' Equity per share based on shares outstanding | $24.91 | $23.16 |

*Based on average outstanding shares and common stock equivalents.

**The backlog shown at June 30, 1971 includes orders not yet funded of approximately $111,000,000 as compared to unfunded orders of $262,000,000 at June 30, 1970. The backlog includes work authorized for the F-14A, EA-6B, A6E and LM programs through 1972 and the E2C program through 1973. The backlog for each period includes orders under negotiation, only to the extent funded.

## Honor Marine night air ace

With the F-14 Tomcat and other supersonic jet jobs rocketing through the skies these days, it may be a little difficult for young pilots to think of the blocky Grumman F6F Hellcat as being one of the hottest planes in Navy history.

Well, she is. And for those with long memories, try this one on for size: Who was the first Marine night-fighter ace in World War II? If you came up with the name Bob Baird, you win first prize.

Colonel Baird, who knocked down six enemy aircraft while flying the Hellcat as a member of VMF-531, retired after 29 years' service last month. And on hand at Cherry Point to bid him happy retirement was Lt. General Bill Thrash (who is shown above left), director of Marine Corps Air Development and Education Center. General Thrash presented Baird with an F6F model similar to the Hellcat he flew in WWII. The colonel also takes with him the Navy Cross, Silver Star, Distinguished Fying Cross, and numerous Air Medals that he earned during his Marine service.

## Youth will be served

Nineteen-year-old Mike Mills is only a year or so out of high school but already he's earned the sobriquet "Mohawk Mike." He picked up that tag when he became the youngest-ever Army pilot of the Grumman Mohawk. Mills, who is a warrant officer, earned his student pilot's license at 16, but when he tried to join the Army's flight program, he found his age to be a detrimental factor—he was just too young.

Finally, a year later, he was admitted to the Army's flight school at Fort Rucker, Alabama. He proved the Army made the right decision when he won the Military Development Award for his class as the candidate with the highest rating.

"Mohawk Mike," who flies for the 184th Military Intelligence Co. at Fort Lewis, Washington, has even bigger things in mind, reports the Army Times. He hopes to become a test pilot.

And Grummanites who produce the twin-jet Gulfstream II at Savannah, Georgia, are seeing plenty of the OV-1 Mohawk these days. The Georgia National Guard, based practically next door to Plant 55 at the Savannah Municipal Airport, has been flying the Mohawk for the past couple of months in operational training. The Army was able to release some of the airborne surveillance systems to the National Guard because of the reduction of material needs in Southeast Asia.

## Reserve needs men

Reserve Unit-W2, based at Naval Air Reserve Training Detachment, New York (Floyd Bennett Field), is actively seeking officer personnel for a number of open pay-billets. The mission of the NASRU is to provide support to the Fleet through performance of problem-solving projects, attendance at appropriate Navy courses and seminars, and "real world" training in assignments at Naval Air Systems Command headquarters or field activities.

Officers affiliated with this program perform duty with pay (commensurate to their rank and service) one Saturday each month and two weeks training duty annually on an individual basis, which permits flexibility in business and personal commitments.

Reservists with aerospace/weapons system specialties, by virtue of education and service or civilian experience, desiring additional information are invited to call the Unit's CO, Vince DeVito, Ext. 3740 or 3512.

# Eleven mark 25 years with Company, 125 more here two decades

Rounding the bend on 25 years with Grumman are 11 men whose 25th anniversaries are in August. The number of 20-year men and women is burgeoning these days, while the quarter- century group grows smaller. This month there are 125 earning 20-year service pins—including Lew Evans, President of Grumman Corporation and Chairman of the Board and Chief Executive Officer of Grumman Aerospace. He joined the Company August 6, 1951.

And then there are 14 celebrating three decades:

**PLANT 2:** Albert J. Losi, Heat Treat; Arthur R. Ginnever and William Paczkowski, Steel Parts Assembly.

**PLANT 3:** Otto Waage, T/M Engineering - Meth. Spec. Detail.

**PLANT 4:** Lawrence C. Renton, Flight Operations/Gulf. O & R.

**PLANT 6:** Victor G. Marks, Manufacturing Planning & Controls.

**PLANT 15:** Sherman Renton Jr., Sub-Contract Management, F-14; Frank P. Mladinich, deputy chief inspector.

**PLANT 27:** George P. Frenz, Center Section Sub.

**PLANT 28:** André Hubbard, historian.

**PLANT 30:** Harvey G. Beall, Communications Administration.

**PLANT 35:** Warren A. Block, QC Systems & Procedures.

**PLANT 39:** Helen A. Holzapfel, Training & Development.

**PLANT 77:** Sydney Wilson, Contracts A/C, Stuart.

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Eleven men are celebrating their silver anniversary at Grumman:

**PLANT 1:** Herbert F. Oldehoff Jr. and Thadies W. Brayboy, Sub-Assembly - Major; John M. Morrison, Fluid Power; Andrew Shreeves, Vehicle Technology Management & Staff.

**PLANT 2:** John Ganim, Controls; Wilbur H. Jacobsen, Tool Fabrication - Status & Jig Bore.

**PLANT 5:** Gordon R. Emmons, Machine Shop.

**PLANT 10:** Wilbert J. Buck, Quality Control Laboratory.

**PLANT 33:** George A. Drab, GSE Mechanical.

**PLANT 35:** George L. Gross, Research.

**PLANT 88:** Patrick J. Dugan, Base Maangement, Point Mugu.

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These 125 are marking 20 years:

**PLANT 1:** William R. Harwood and John H. Jackson, Fuselage Fwd. Sub & Majors; Robert H. Fortin, Hydraulics; William F. Flynn, Elect. Fabrication; Albert A. Hoffman, T/M Engineering - Method Electronic Technical System; Robert E. Mort, Facilities Maintenance; Hilaire M. Della Ratta, Program Management - F-14A; Milton D. Kent, Configuration Data Management.

**PLANT 2:** Louis Tomeo, Press; Robert A. Ford, Cadmium Plate; Dominic Sanzoverino, Spotweld; Richard Lindsay, Frederick Timmerhans, John A. Desotle, and Nicholas R. Martino, GSE Mechanical; Henry Wall and John P. Chacalos, Steel Parts Assembly; George Burt, Central Section Major & Subs; Angelo Cassella, Wing, Inner Panel & Combo; Nat P. Menna, Leo Krug, and Albert C. Brecht, Hydraulics; Elias E. Wilson, E. B. Welding; William E. Burn, Cleaning & Descaling; William Caniano, Plant Management & Staff; Kurt F. Haake, Ray M. Smith, and Anthony J. Bianco, Production Control - Parts Control; Arthur R. Garmendia, Industrial Engineering - Plant Service; Roman K. Polanski, Detail Parts Planning; Edward Libby, Tool Fabrication - Jigs & Fixtures; Louis A. Rasera, Tool Fabrication - Die Shop; Kenneth L. Petty, Tool Fabrication - Templates; William S. Grecz, T/M Engineering Methol Mechanical Technical Fl. System; Edmund Remondino, T/M Engineering Tool Design Aircraft Production.

H. J. Oldehoff
Sub-Assem.

T. W. Brayboy
Sub-Assem.

J. Morrison
Fluid Power

A. Shreeves
Ve. Mgmt.

J. Ganim
Controls

W. Jacobsen
Tool Fab.

G. R. Emmons
Mach. Shop

W. J. Buck
QC Lab

G. A. Drab
GSE Mech.

G. L. Gross
Research

P. J. Dugan
Base Mgmt.

**PLANT 3:** Charles C. Cali, Router & Shear; Frank W. O'Neill, Press; Philip J. Barton, Small Parts Fabrication; John Mayall, Spotweld; Stephen T. Siragusa, Chem Mill; Louis Lupoli, Wing Final Assembly; Kenneth J. Lampel, Profile Mach/Hydraulics; Ulysses Smalls, Jerome Presepio, and Frank Francioli, Honeycomb Pre-Fit; Warren Andersen and Lloyd N. Miller, Honeycomb Prep.; Fred Cassese, Honeycomb Final; Garry C. Barker, Honeycomb Bonding; Adolph J. Vnook, Production Control - Parts Control; James M. Barnes, T/M Engineering - Meth. Spec. Det.; Stephen Sally and Frank Morosky, Facilities Maintenance; Milton N. Kramer, Inspection - Mechanical.

**PLANT 4:** Edward P. Molloy, Fred Skinner, and Robert Moody, Facilities Maintenance; John B. Phillips, Inspection - Mechanical.

**PLANT 5:** Richard A. Guarino, Final Assembly; Hilton Howard and Jordon C. Dunlap, Static Test; Harry L. Roehrig, Space Management & Staff; Raymond G. Williams and William G. Strozak, Avionics Management & Staff; Irving L. Pedrick, Requirements Development; Fred E. Knapp, Vehicle Technology Management & Staff; Stokely Webster, Corporate Development; Llewellyn J. Evans, Board Chairman of Grumman Aerospace.

**PLANT 6:** Vincent J. Valetutti, Plant Management & Staff; Hans Kalle Jr., Manufacturing Planning & Controls; Leroy J. Lawlor and Francis L. Rath, Tool Fab. - Tool & Die Shop; James Foley, Facilities Maintenance; Emil Rittmuller, Inspection - Electronics.

**PLANT 11:** Robert T. Ryan, Tool Fab. - Cutting Tool Shop.

**PLANT 12:** Charles F. Karpinski, Facilities Maintenance; Francis S. Brauer, Material & Processes, Operations & Administration; Robert L. Blackshaw, Advanced Material & Processes; Charles Muller, Measurement Standard Planning & Control.

**PLANT 17:** Charles H. Waldeck, B/P & Off-site Warehouses; William Jeffries, Arlie P. Repoff and Edward F. McNiff, Shipping & Spares Consolidation.

**PLANT 18:** August Nielsen, Plant Protection.

**PLANT 20:** Vincent Magnussen, Transportation Office; William R. Burke, Transportation Equip. Maintenance.

**PLANT 24:** Richard W. Spader, Receiving Inspection - Mach Pts.

**PLANT 25:** Henry C. Bell, Specifications.

**PLANT 27:** Nicholas Accetta and James McDonald, Fiberglass; Benjamin L. Kenney, Major Assembly; Francis Nichols and John P. Warankiewicz, Sub-Assembly; Clara J. Burr, Food Service.

**PLANT 28:** Stephen Kalman, Personnel Administration; Robert E. Amott, Corporate Security.

**PLANT 30:** Richard McAleese, Requirements Planning; Charles W. Schwalbe, Arch./Layout Engineering; Walter A. Scheu, Accounting Staff; William Fehrs Jr., Gulfstream Program director.

**PLANT 32:** Herbert W. Beatty, Machine Operations Shop Control.

**PLANT 33:** Joseph E. Opaco, Wire Preparation; Francis A. Law, Avionics Installation; Arthur F. McDonald, Propulsion; Albert F. Eggleston, Facilities Maintenance; Earl Seagle, Inspection - Support Equipment.

**PLANT 34:** Allan E. Dooley, P/S Business Controls; Harry L. Foster, P/S Technical Services; Robert W. McGlone, P/S Provisioning Requirements; Robert H. Knatz, P/S Technical Writing.

**PLANT 35:** Alex Zubchenok, Engineering Administrators; Harry Chocheles, Inspection - Mechanical.

**PLANT 36:** Harry Aufderheide, Final Assembly - Structure; Franklin W. Gilmore Jr., Shipping & Spares Consolidation; Frank A. Portoghese, Facilities Maintenance; Warren E. Moyer, QC Quality Engineering.

**PLANT 40:** John C. Breimann, Grumman Data Systems.

**PLANT 55:** Frank Muirhead and Frederick L. Happ, Major Assemblies, Savannah.

**PLANT 77:** Louis P. Parrella, Production Mgmt. - Operations/Staff; Felix S. Cusa , Inspection/QC; William B. Beetle, Fuselage Assembly, Stuart.

**PLANT 83:** Gordon F. Burby, KSC Manufacturing Offices; Charles R. Cava, KSC Manufacturing Shops, Cape Kennedy.

**PLANT 88:** Philip Biancone, Base Management, Point Mugu.

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One woman and 32 men are completing 15 years:

**PLANT 1:** Joan R. Manahan, F-14 Program; Roy Montana, Manufacturing Engineering Program & Plant Management; Roy Decker Jr., Reproduction Services; Robert Montusi, Environmental Control Design; William E. Parente, Power Plant Design; Harry J. Ryan Jr., Vehicle Product Engineering; Victor C. Resmini, Specifications.

**PLANT 2:** Benedetto Palazzolo, Production Control Plant Stores & Distribution.

**PLANT 3:** George F. McKendrick, Facilities Maintenance; Herman R. Clark, Inspection - Mechanical.

**PLANT 4:** Lawrence E. Lorentzen,

*(Continued on page 10)*

**Return engagement.** **At six-foot-three with a Ph.D., Dr. Irving Jones (L) is hardly the prototype of Grumman 'summer help,' but 'technically,' that's what he is. He worked at Grumman, '57-'62, became an associate professor at Howard University, and has been back for some high-level work this summer. (Photo by Nat Scherer)**

# Jones tower isn't ivy covered — he spends his 'vacation' in space

A complete picture of Grumman's "summer help" this year would have to include a tall and bearded fellow in Plant 35 by the name of Irv Jones.

"Summer help" usually conjures up a smattering of young people doing vacation fill-ins to earn their way through school, but Jones is different. He comes equipped with a Bachelor's degree from Howard University, a Master's from Columbia, a Ph.D. from Polytechnic Institute of Brooklyn, a tour as a first lieutenant in the Air Force, and the title of Assocate Professor at Howard University in Washington, D.C. And he's a former Grummanite, too.

In Plant 35, where he has been working all summer, he's known as "Irv," but at Howard they call him "Professor Jones." He graduated from there in 1953 and was invited back in 1969 to set up a graduate curriculum in Structural Mechanics, as part of Howard's growing graduate school. It's attended by Americans, Orientals, West Indians, Africans. "Cosmopolitan," says Jones.

The combination of academic life in college and then three months of summer work in industry suits him very well, he observes, "but I'm more of an engineer and less of an academic person, actually."

It would be hard to say what pleases him most. He loves tennis, plays about three times a week, and admits to being an "ex-tournament player." He's a hi-fi buff with a penchant for jazz. Has many friends in the world of sport and viewed the Olympics in Rome in 1960. "I knew some of the track stars."

## Sorry about that . . .

If we ever doubt the popularity of the classifieds, all we have to do is cut them down or leave them out, and the phone starts ringing. There was so much news this issue that many an ad got crowded out. Yes, we ARE sorry . . .

One guesses that he might have been pretty good at track himself. He's a rangy six-foot-three.

"Summer help?" Oh yes. He's been working in Warner Lansing's Structural Mechanics section, which is a part of Structural Sciences, where one of the emphases is on thermal problems in connection with the Space Shuttle. The orbiter has to be analyzed for thermal stresses developing during re-entry into earth's atmosphere, and because it is reusable, the problem is more complex than that of Apollo. To quote Lansing, "We have to know how to analyze for thermal stresses, and our goal is to optimize the structure with the thermal effects included. The vehicle experiences very severe heating during re-entry."

## Locked some horns

Irv Jones worked in Grumman Engineering for five years, 1957-62, and he spent a good deal of time then on the Eagle Missile, analyzing structures subjected to aerodynamic heating. "As a fallout from this, I was able to co-author and present several technical papers." Since that time he has earned his Doctor's degree at Brooklyn Poly and has been assistant director at Applied Technical Associaties Inc. in New Jersey. He was also employed part time as an engineer at Fairchild Hiller, with a few months in '57 as a research assistant at Columbia.

Grumman seems to be his home in industry, however, and when he was invited to give an advanced course in Thermal Stresses to 30 of his fellow-engineers in Plant 25 this summer, he willingly stood up there and laid it out, twice a week, for three weeks, early in the morning, 7:30-9:30. Says Jones, "We got into some deep problems and locked some horns. I think the course was beneficial—to them and to me, and, I hope, to the Space Shuttle Program."

# Flying Club gains another pilot as Dottie Zotter earns wings

Dottie Zotter has her pilot's license, Ellie McCullough just got her glider license, and Pete Ruvolo's wife, Pat, has her pilot's license. They're all members of GACE, Grumman's thriving 300-member flying club headed by John Pereira of Structural Mechanics, Plant 35.

To Dottie, who likes to ski and water ski, and who works in Records & Release, Plant 2, flying was something she had wanted to try since she was very small. "I used to go to the airport at Deer Park on Sunday and just watch the planes," she confesses. "When the new Grumman flying club was announced, I felt ready to afford it, and so I signed in. By then I knew a few people in the club."

## Lots of patience

How did she feel? Was it as great as she expected? "I was sort of petrified that first lesson," she answered, "but my instructor was Dan Polchinski, and he had a lot of patience and a sense of humor. Lots of times I was ready to give up, but he pushed me through the periods when I didn't seem to be progressing very much."

"Is it more fun now?" Dottie doesn't commit herself much, but she's progressed to a four-passenger 172 Skyhawk. "I never reach the point of over-confidence," she says. "Flying is never twice the same. You have to have a feeling of responsibility."

Dot is the first girl member of the club to start from zero time and pass all the tests, according to Club Secretary Carl Echols.

Pat Ruvolo holds what the club calls a "family membership" that has entitled her to use the club planes and Deer Park Airport facilities to get **her** license. Nice to have a spare pilot in the family. Husband Pete works in Manufacturing Cost Proposals, Plant 2. He's been flying for two years.

## Soaring high

Ellie McCullough is usually in the air when she isn't skimming the typewriter keys for Business Development in Plant 5. She's a real pro, with many races (and trophies) to her credit. She's also made 16 parachute jumps. But it was something of a high point in her career to get her glider license at Elmira, N. Y., doing all the complex things a glider pilot must do: stalls, turns, slow flight, spot landing. "On tow, you have to go through the wake of the tow plane and go around it to come back," she explains. Gliding is "wonderfully smooth and quiet."

Flying in the All Women New England Air Race in a Cherokee 140 (named Schatzy), Ellie and her navigator scored second over-all and first in performance flying last month between Indianapolis and Wichita. "We got 98 out of 99 points but listen to this: I estimated we'd use 68 gallons, and we used more—68-1/10. Elapsed time I predicted at 8 hours and 1 minute, but then, darn it, I forgot about that 1 minute and landed at 8 hours." She's entering the New England Air Derby in October and next spring, the Angel Derby—international all-women's air race, Monterey, Mexico, to Florida. "Vacations," she says, "are for flying."

**'Started from zero.'** **Dot Zotter of Records & Release, Plant 2, is the first girl member of GACE (Grumman Aerospace Corporation Employees) flying club to get her pilot's license under club tutelage. GACE has 300 members and eight instructors, and if you're interested in joining, call Carl Echols, club secretary. (Photo by Bob Settles)**

# Jets, Monopoles still undefeated as softball loops near windup

It was a short reign for the Shadows as champs of the Thursday after-hours softball league. But after what happened to the "Big Red Machine"—after some had predicted the dynasty would last for years to come in that **other** league—it shouldn't have come as a big surprise when the Jets proceeded to clobber the Shadows every time they met this season. After belting the Shadows in the GAA Invitational Tournament, the Jets came right back and socked-it-to-them again, 11,9, in the Thursday loop as Mickey Rowles cracked a homer and Mike Fiola rapped two doubles and a single to pace the win. By tacking on 5-2 and 21-6 wins over the Rangers and Whiffles, the Jets finished their season undefeated in regular league play. Marty Martinez socked two homers in the Ranger victory, and, in the Whiffle rout, Brian Scheu collected five hits, including a pair of doubles, Chuck Hess had four, including a homer and triple, and Ralph Classen also hit for the circuit.

And, adding insult to injury, the Hustlers shoved the Shadows deeper in the final league standings as they gained a 7-6 final-game triumph enabling them to end up second. The Shadows carried a two-run bulge into the last inning—despite a tape-measure shot by Harold Johnson—but from there on it was all downhill for the former champs. The Hustlers scored three, the final two on Art Lih's single with the bases loaded. Earlier, the Hustlers edged the Rangers 13-10 on back-to-back homers by Fred Neuscheler and Tom Cobey, while the Whiffles also laid it on the Shadows, 14-11.

### Never too late

Following a streak of six straight losses, the Mufflers finally put it all together in the Monday American after-hours loop and it earned them an 8-6 victory over the Good Guys. Although the win might appear to have put them just a notch above the disaster level, there was still hope of a playoff berth after John Slonaker had punched across the winning runs with a two-run homer. . . . The Monopoles ran their record to 9-0 as Pete Vitteritti slashed two homers in a 14-4 victory over the Road Runners. Hal Johnson conked one for the Runners. . . . In the National division, Research clicked off three straight, beating the Vikings, 5-4, the Twisted Ducks, 20-3, and the D'Amicos, 6-4. It took a homer by Chuck McLaughlin and a two-run single by Joe Lisa in the seventh before Research could edge the Vikings, but the Ducks went out without a whimper as John Brook, Ken Keene, Bob Schmidt, and Harold Levene combined for 12 hits. D'Amicos jumped off to a four-run lead in the first in the 6-4 Research victory, but a steady defense and a 15-hit assault proved decisive in the league title-clincher for Research.

### It's all relative

At times, the word "oldtimers" seems to have a condescending ring to it, but at Plant 1, nobody is feeling sorry for the Oldtimers. After winning the first-half title in regular league play, the Odtimers are trying for a sweep by clinching the second half, too. In recent action, Ken Smith—whose wheels are in better shape than most anybody around—tripled, doubled, and drove in five runs while leading his team to an 8-5 triumph over the Invaders. Chucker Frank Jagiello may not be able to toss the sneaky-fast "Figure-8" as he did 20 years ago, but he gets by, he gets by. Well enough to earn the pitching decision in that tilt and stroke two singles as well. . . . Hank Szubseda of the Misfits tripled over Ken Smith's head in an earlier game—and he should have quit when he was ahead. He didn't, though. He tried for home and when he got there catcher Jack Caulfield was waiting with the ball. It came in on a relay from Smith to Charlie Seaman and the tag prevented a run and a big rally in the 6-3 Oldtimer win. Art Frasca's single and triple drove in two tallies for the winners, but hitting honors went to the Misfits' Wes Douglas who had a single, double, and triple.

**Top guns.** **Members of the Plant Protection pistol squad won their second straight national industrial pistol title recently by scoring 752 out of a possible 800 in competition against 54 other industrial firms. Winning team included (L to R) Mike Suspenski, Tom Rozzi, Al Berka, and Joe Oliveri. All four finished in the top 20 of the 304 shooters participating. (Photo by Bob Settles)**

### Another 'oldtimer'

Things weren't bad enough for the Boppers and Fiberglass in the Wyandanch league where the Soul Brothers have really been laying' it on them, but they got a lot worse after manager Sherm Jacobs called Manny Gumbs out of a retirement to bolster his squad during the pennant race. All Gumbs did was sock three hits, one a homer, to lead the Brothers to a 20-7 rout of Fiberglass. . . . The Brothers also whacked the Boppers, 7-3 and 7-4. Rudy Reid and Don Seagraves provided the batting highlights for the winners.

The Digits are showing no mercy to their opponents in the Wednesday American after-hours league. Jim Dimitry tossed a nifty seven-hitter a couple of weeks ago while collecting four of his team's 33 hits in the 23-0 rout. Al Wolfman had five safeties while Joe Miller, Jim Casey, and Gene Lowe all had four. Casey got his fourth when Hits' hurler Sig Robinson tossed one short. But Jim took it on the first hop and punched it into right for a clean single. . . . The Digits ran their string to nine straight wins in a 25-2 win over the Egg Beaters. Dimitry came close to another shutout—this time he allowed only three hits—but the big noise came from Sal Iaccarino's bat. He slammed two homers and two singles. Jim Casey homered, doubled, and added three singles, while Dimitry chipped in with a solo shot. They're taking no prisoners. . . . In other games, the Tac Jammers whacked the Hi-Balls, 13-3, and the Hits, 16-3, and the Hits routed the CBA Stars, 16-7.

Well, Jim Dimitry got another shutout—but this one came in another league, and with another team. Jim tossed Simulation to a 28-0 win over ILS in the Tuesday American league. Paul Bavitz (2), Mike Ottone (3) and Joan Slonaker homered in what might be called a rout. . . . Raising its record to 7-0, Simulation edged the Mets 9-6 with help of round trippers by Mike Gabriel and Joe Nieves. Tom Ramberg had a blast for the Mets. . . . Later, Simulation ran its skein to 11 straight by taking two from the Woodpeckers, 8-4 and 9-7. Bavitz, Gabriel, Mel Washington, and Ottone were the hitting stars. . . . ILS is running up some sort of a record in the loop, but it's not likely to gain any "bravos." In the past couple of weeks, ILS started on its streak by losing an 8-4 decision to the Mets, then quickly added reverses to the Dacs, 29-6, and 29-9, and followed up with a 14-2 loss to the Woodpeckers. It made the Dacs happy, though. After losing two close ones in recent play, they exploded for 10 homers in the double header. Dave Oestel had 11 hits in the two games, three of them homers, to pace the twin win.

Satchel Paige gained belated recognition recently for his pitching exploits, and Hoyt Wilhelm is another "oldtimer" who's still tossing them up to the plate, but is there anyone who can top Lenny Luke of the Sloe Pokes for longevity on the mound around Grumman? And he's still winning, too. The last one was a 13-6 victory over the Tomcats which ran his record to 5-4 in the Wednesday National loop, and before that he tossed a 9-7 win over the Lancers. Can't say how old he is, but it's somewhere between Hoyt and Satchel. Way to go, Len! . . . The 'Cats edged the Vikings earlier 9-3 with help from Mel Knopf. . . . It looks as though Willy's Warriors are on their way. The Warriors ran up three straight, 13-4 over the Plumbers, 10-8 over the Vikings, and 20-6 against the Pokes. Bruce Marcus slammed two homers for the Vikings, but clouts by Don Andreasen, Joe Palmieri, and Joe Rivera for the Warriors put it out of reach. Jim Karanik turned in an unassisted double play in the bottom of the sixth—and it helped. The Viking had scored four runs and still had the bases loaded when Karanik ended the rally.

### Up for grabs

It's still anybody's pennant in the Tuesday National circuit. The OAO Stars were breezing along with a 6-0 mark before the Druids ended a two-year hex by clobbering the Stars, 11-5. Rich Barbini, Charlie Smith, and Jim Rembrandt helped end the Stars jinx over the Druids. . . . The Druids came right back with 15-11 and 7-3 wins over the Supporters and Tigers respectively on power slugging by Dick Truran, Mac Baker, and Harry Butts. . . . The Mohawks ended that scamper with an 18-5 romp, but in the second game of the double header, the Druids bounced back with an 8-6 victory. Barbini clouted one in that engagement. . . . The Mohawks added a 17-15 win over the Campbell Kids with heavy hitting supplied by Irv Austin, Jack Fitzsimmons, Jim Schwab, and Bill Kopack. . . . The Kids' Joe Catanzaro tossed an eye-catching 4-0 shutout against the Tigers but the Campbells are out of pennant contention. . . . Still in there, though, are the Titans. Their record is at 8-2 after wins over the Tigers and OAO Stars. Charlie Savatteri and Jack Ferrante paced the 15-5 win over the Tigers, and a homer barrage by John Goebel, Larry Hill, and Ron Winter sparked the 14-3 decision over the Stars.

## Pinehurst standouts

Elena Semertgis and Brian Scheu combined to score a 42 on the back nine of the Yellow course in the third and final Mixed Pinehurst get-together at Bethpage State Park on August 18, and although the field was modest when compared with earlier events, it was lively nevertheless. Elena, who heads back to Suffolk Community College soon, and Brian both work in Accounting, Plant 30. Elena was cracking those tee shots about 180 yards or so—pretty impressive considering it was only her sixth try at the game.

Earlier, Bella Miglio of Contracts and Willie Suppa of Transportation teamed up to finish with 41 on the Blue course, low in the second Pinehurst which was played July 21.

**Aces high.** Mike Cherry of GAA (R) chats with George Thompson, Joe Barbetta, and Dick Moebes about aces they scored in recent links play. They joined an ever-expanding group—why Mike has three to his credit already. (Photo by Larry Van Wallendael)

# Tee team cards eighth victory

Par, or near-par, golfers have very little in common with the bogey variety. You can match scores to confirm that fact. But in at least one respect they are a lot alike.

Take Jim Alverson, captain of the Grumman team. Most often Jim is hovering around par. But once in a while he strays too. In the last match with Photocircuits—won by Grumman 7-1—Jim had trouble staying on the fairway and turned in his worst round of the year. What did he have? That's hard to tell—and therein lies the similarity between par and bogey golfers. When either of them has a bad round, they like to get rid of the evidence and quickly. And that's what Jim did. So other than knowing that Tony Cisco was outstanding in that engagement with Photocircuits, the other scores are unknown. Join the group, Jim!

### Below par

Earlier, Jim was two under par for 12 holes on the Black course at Bethpage as he paced a 6-2 victory over Republic in the L.I. Industrial golf league. Alverson carded birdies on the 470-yard par-5 fourth hole and on the 393-yard par-4 fifth. Other scores for Grumman in the match were: Steve Gray, 51; Willie Suppa, 52; and Bob Holsten, 53.

In a 7-1 win over LILCO, Steve and Willie finished with 51s, while Caesar Roscigno scored 53 and Holsten had 58.

The Grumman varsity now has eight straight victories in the Long Island league and needs only one more win to finish the season undefeated and claim its ninth team title in the past 10 years.

### On the money

Al Ghoreyeb and Don Pooters highlighted play in the Program Management loop at the Hauppauge Country Club as they turned in sparkling eagle-2s on the 14th and 4th hole, respectively. Ghoreyeb finished with 40, four over par, for the nine-hole play to tie Cliff Miller for second place that round. John Herman closed at 38 to grab individual honors.

Miller earned Flight A second-half medal play honors in the league, while Walt Gaylor finished first in Flight B.

## Mets, Mizzou on tap

If you're a real Met fan you haven't given up yet . . . so, perhaps you'd be interested in seeing what could shape up to be a really "crucial" game in the National League east. That's the Mets-Pirates night game scheduled for Friday, September 24, at Shea Stadium.

Nearly 1,000 reserved-seat tickets for the game in Sections 12, 6, and 4 (mezzanine) went on sale at GAA last Monday but there are still plenty left. Tickets cost $2.75 apiece; round-trip bus fare from Plant 3 (leaving at 5:30 p.m.) is $1.50. If you're interested, stop at the Grumman Athletic Association office in Plant 28B.

On Saturday, October 2, the Missouri Tigers will run into the Cadets of Army at Michie Stadium—and the head-knocking will probably be heard back in Fun City.

So, naturally, the Grumman Athletic Association in its wisdom and thoughtfulness secured a block of tickets for the game which will go on sale at the GAA office in Plant 28B starting Monday, August 30. The tickets cost $6 apiece. If you want to leave the driving to GAA, bus tickets are $3.25 each.

The bus will leave the Plant 3 parking field on October 2 at 8:30 a.m., arriving at West Point in time for the Cadet parade at 11:55 a.m.

# Net squad preps for playoffs in bid for 9th L.I. team title

Can it be done? Can the Grumman varsity tennis team capture an unprecedented ninth straight Long Island Industrial League championship?

Well, with the season practically over, Manager Mitch Rosenbaum and Captain Fred Hermann are thinking "yes"—although there were a few moments during recent play when it was "maybe." But with 19 members left over from last year's squad, plus newcomer Bob Bentler, it's more than likely that the Grumman team has enough racquet power to do the job.

Although the Grumman team "breezed" past its first two opponents in regular league play, there are indications that Photocircuits could be difficult the second time around. Against Photocircuits, the No. 1 doubles team, Fred Hermann and Bill Wenzel, was extended to three sets, 4-6, 6-4, 6-2, before winning.

Jacques Crouzet-Pascal and Jay Leng zipped to a 6-1, 6-0 victory, but in the third match, Val and Alex Kirillin were deadlocked with their rivals at 6-8, 8-6, 7-7 when darkness fell. Since the match was not "crucial," it was not completed. But it's easy to see that a slight change—a close game lost instead of a close game won—could have resulted in a victory for Photocircuits.

It was no contest, in a manner of speaking, in the Republic match. Wenzel and Hermann won 6-4, 9-7; Crouzet-Pascal and Lang, 6-1, 6-1; and Val and Alex Kirillin, 6-1, 6-2.

In the second round of play, Grumman had trouble with Photocircuits again as Fred Hermann and John Hsu were dropped, 1-6, 5-7, before the Kirillline won, 6-1, 6-1, and Don Bohling and Dick Reade sewed up the 2-1 match victory with a 4-6, 6-3, 6-4 decision.

It wasn't exactly easy against Republic, either. Rosenbaum, the 62-year-old maanger, had to step into the breech with Gerry Fogel in the final tilt and won 6-0, 6-1, thereby cementing that triumph and the top spot in the division. Fred Hermann and Tom Guarino scored a 6-3, 6-0 win while Val Kirillin and Bill Wenzel dropped their meeting, 3-6, 4-6.

Following regular league play, there is a playoff between sections in the L.I. loop to determine the 1971 loop championship. Grumman, in winning eight straight titles, also has two legs on the present team trophy in the L.I. circuit.

Other team members are: Tom Adee, Bentler, Dick Bergman, Don Bohling, Joe DiStefano, Gerry Fogel, George Garaufis, Tom Guarino, Grant Hedrick, John Hsu, Andy Kaufmann, Dick Kline, Nevil Milford, and Dick Reade.

# GAA slates paddle ball tourney, handball, 'shoe play for Sept. 13

GAA has announced that play will start on Monday, September 13, in the annual horseshoe and handball tournaments, and this year, for the first time, there will be competition in paddle ball. Applicants for the three tournies are requested to fill in the accompanying registration form and forward it to the Athletic Association in Plant 28B, Bethpage. By the way, paddle ball will be scheduled for doubles only, and that, too, depends on the number of entries.

Play in both horseshoes and handball will be held Monday through Fridays, starting each day at 12:30 p.m., with 'shoe competition scheduled for the Plant 3 courts, and handball set for the town park adjacent to Plant 30.

Herb Mahoney is directing handball play and Mike Cherry is supervising horseshoe competition.

These tournaments will be staged for all Bethpage plants, while separate events are planned for plants in Garden City, Syosset, Wyandanch, and Calverton.

All applicants who do register for the tourney will receive further instructions from GAA on time, location, and tournament rules.

### Tournament Entry Registration

Paddle Ball ..... Horseshoes ..... Handball .....

Singles ..... Doubles .....

Name ..... Ext. .....

Plant ..... Dept. ..... Perm. No. .....

Doubles Partner

Name ..... Ext. .....

Plant ..... Dept. ..... Perm. No. .....

**Entry Deadline Friday, September 3**
**(Forward to GAA office, Plant 28B)**

# AD: pushing back frontiers of science . . .

*(Continued from page 2)*

need be used—a saving of $360 in chips plus the cost of machining.

"In addition," Micillo says, "we're designing, fabricating, and testing an all-titanium diffusion-bonded component at the tail end of the fuselage (called a 'beaver tail,') and we're pursuing a nine-month unsolicited proposal to the Naval Air Systems Command to make and test a graphite-epoxy main landing gear strut door; and it looks as though the door could be made 21 percent lighter while saving $740 per airplane as well. Savings like that have to be valuable.

"And that's only a couple of cost-saving, weight-saving possibilities. Many more are going to follow."

August was careful to mention other AD project areas—non-destructive testing, under John Munyak, flight test, under George Gayes, and systems technology under Murray Ginsberg. "For example, John (Munyak) and his people are working with a variety of energy forms: X-rays, neutrons, eddy currents (weak current fields), microwaves, and, in the optical field, holography. One part of his effort is to detect flaws by introducing them deliberately—to see if they're picked up during analysis. Then standards are set and destructive tests are made to substantiate the theory."

Munyak points out that there's been considerable success in X-ray radiography. "We've developed a collimator (a concentrated radiation beam) that eliminates the scatter effect. That means that we no longer have to clear out everyone in a production area before turning on the machine—and the procedure is safe."

In Ginsberg's area of operations there's a flock of contracts: "We're looking into the effects radiation will have on computer design and component performance for both aircraft and space environments. We're to design an advanced airborne digital computer for use in the 1975-1980 period. We also have a program applicable to guidance of an air-to-surface missile. Under NASA contracts, we're to develop and demonstrate a 100-ampere nickel cadmium battery, and also perform an analysis related to the OAO. We have two subcontracts with Sperry, which is designing a three-dimensional radar ground system (for the Marine Corps), another with Garrett for advanced diagnostic sensors for study of application for air-breathing engines. And frankly, there's a lot more."

### Practical applications

Gayes has the same abundance, including a study of a dynamic performance method to determine aircraft drag. "So far," says Ron Parsons of FAD, "educated 'guesstimates' have been the best anyone can do, but we hope to measure the balance of forces accurately. Once you can do that, flight-test time can be reduced. We've already proved that it works with the A-6 Intruder. Flying the plane almost as though it were a roller coaster and using computers, we can get accuracy four times bettter than we got with our previous system. It promises to be a real dollar and time saver with F-14A."

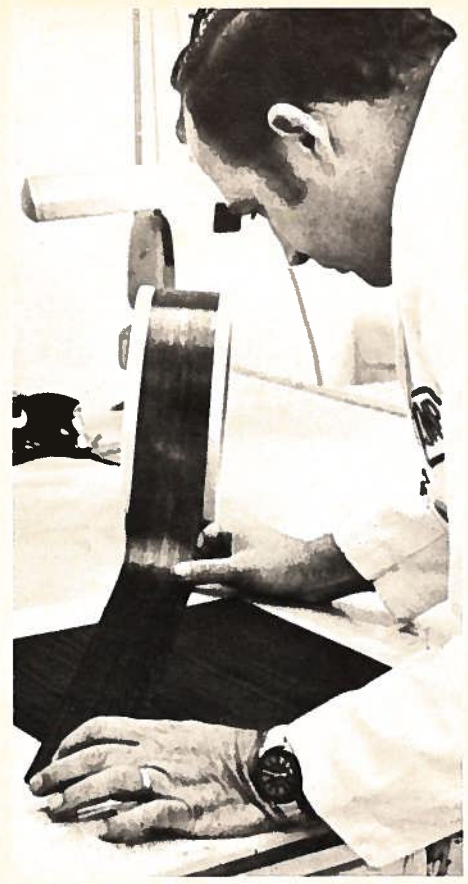
"And there are other projects," says George Gayes, "such as the investigation of advanced strain gauge methods, a study of specific excess power for more effective energy management, and so on."

Bower applied the clincher:

"All of this is really only a smattering of what's going on in AD—and a small smattering at that. Many, many other areas we haven't even mentioned. So actual AD activity is greater than this type of selective listing would indicate.

"But even more important are the large number of people involved. So you will have a better grasp of how AD functions — I should mention that we use a matrix system. That is, the people working on AD projects, though they are responsible to me (in fact, to Artie now), come from various departments, which are their home bases. To put it another way, I work for Newt Spiess of Product Development, who has the responsibility for new business. AD has to provide the technical depth with the customer to obtain this new business. We in turn challenge the operating departments, such as Product Engineering, Materials and Processes, FAD, etc., to join us in establishing this technical 'acceptance' — and that means getting the cusomer's development dollar. I feel that this is a tremendous personal challenge to the technical man. And it certainly is paying dividends as literally over a 100 engineers are interfacing with the customer directly and bringing home contracts. That makes for maximum use of a person's talents and skills. Both the Company and the individual gain."

As August says, "The system accentuates flexibility, and that's just what's needed when you're investigating new materials, products, and processes. In short, your job is to go well beyond the state of the art. That's how you win—and keep—customers."



**Lay-up shot.** **Technician Bob Andrews works with graphite-epoxy tape at Plant 3. Graphite costs half as much as boron and also has high strength, low weight, and high stiffness. (Photo by Harry Prodromides)**

# Name six to operational posts . . .

*(Continued from page 3)*

President Corky Meyer.

Hall and his wife have two daughters: Debbie, in medical school, and Kathy, a junior at Mount Holyoke. The family lives in Huntington.

Stepping into Al Hall's former post of director of Machining Operations is Phil Vassallo. He's located in Plant 2, Ext. 7827.

Phil started at Grumman in 1957 in the Engineering Change group, moved to Structural Design (Vehicle Design) then worked in Engineering on the A-6A, Gulfstream, and F-111 Programs, all the while taking courses to complete an engineering degree.

Vassallo became section chief in Machining Engineering, then assistant to the director of Machining Operations. He served as deputy director of Machining Operations in '68 and '69, and now he is director for all Grumman machining operations, including Plants 56 and 58.

Phil and his wife, Mae, have three daughters, Susan, 10, Marie, 8, and Andrea, 4, and live in Bethpage.

# They're celebrating anniversaries . . .

*(Continued from page 6)*

Drafting; Richard L. Bauer, Flight Transportation.

**PLANT 5:** Ralph Ostebo, Flight Avionics; Anthony Frank and Charles Collette, Structural Test Engineering.

**PLANT 7:** William Clark, Vibration & Flutter Analysis; Francis McNally, Projects - Aircraft; William L. Horne and John Berdinka, Crash Crews; Richard N. Orr, Vehicle Flight Test Staff.

**PLANT 10:** Edward Moles, Quality Control Laboratory.

**PLANT 15:** Robert Kramisen, Product Support Program Management; Michael Sabia, Product Support Systems Analysis.

**PLANT 18:** Kenneth E. Kinsel and William F. Cuppinger, Plant Protection.

**PLANT 25:** Michael J. Pepe and Nicholas Hadjigeorgio, Crew & Equipment Integration.

**PLANT 27:** Lester R. Wolf, Plexiglass.

**PLANT 30:** Harold N. Clifton, General Purchasing; Jerome G. Rainford, Invoice Audit.

**PLANT 34:** Robert E. Geisel, Electrical Design; John D. Alber, Program Management - A-6.

# OBITUARIES

**Plane News has received word that death has come to the Grumman personnel listed below. We extend sincere sympathy to relatives and friends.**

GEORGE L. COCHRAN III of Production Planning, Plant 55, died July 20 at the age of 26. He had been with Grumman since 1967 and lived at 229 E. Columbus Dr., Savannah.

HENRY MORAVEC of Flight Development/Operations, Plant 7, died July 24. He was 45 years old and had joined Grumman in 1956. He lived on Forbes St., Oakdale.

ARTHUR DRUMGOLE of Final Assembly, Plant 33, died July 27. He was 46 years old and had been with Grumman since 1964. He lived at 105-35 135th St., Richmond Hill.

WILLIAM B. ROUCOULET, of Final Assembly, Plant 77, died on July 29. He was 50 years old and lived at 2004 Palm Lake Dr., Stuart, Fla. He had been with Grumman since 1966.

WILLIAM H. WINTER, of Lab Test, Plant 14, died July 31. He was 57 years old and had been with Grumman since 1962. He lived at 3 Yorkshire Ave., Stony Brook.

ROBERT H. NEFF of KSC Logistics, Plant 83, died August 1. He was 60 years old and had been with Grumman since 1963. He lived at 611 East Lakeshore Dr., Cocoa, Fla.

NORMAN A. KOTLARCHYK of Project Engineering - Development Aircraft, Plant 1, died August 1. He was 47 years old and had been with Grumman since 1950. He lived at 28 Newport Dr., Plainview.

SPENCER E. TWEED of Instrument Test, Plant 6, died August 2. He was 61 years old and had been with Grumman 26 years. He lived at 5 Kay Rd., Calverton.

PAUL J. BOYUKA of Electronics Fabrication, Plant 33, died August 8. He was 63 years old and had been with Grumman since 1965. He lived at 3105 Heather Ave., Medford.

CONRAD G. MAUCH of Plant 3 Machine Shop died August 10 at the age of 51. He had been with the Company eight years. His home was at 123 Intervale Ave., Farmingdale.

ALBERT NACLERIO died August 10 at the age of 56. He lived at 33 Red Maples Dr., Wantagh, and had been with Grumman since 1951. He worked in Alighting Gear, Plant 34.

JOSEPH AVOLESE of Ground Support Equipment - Mechanical, Plant 2, died August 12 at the age of 50. He had been with Grumman 15 years and he lived at 1692 Kroll Rd., East Meadow.

VINCENT P. SPECIALE, Marine administrator, Plant 35, died August 21 at the age of 45. He had been with the Company 18 years. His home was at 8 Evers Ct., Commack.

JOSEPH F. YARZUMBECK of Transportation - Equipment Maintenance, Plant 20, died August 21. He was 57 years old and had been with Grumman two years. He lived at 212 Steven St., Bellmore.

FRANK G. LEONE, who had worked for Grumman a total of seven months and was a Thermal engineer in Plant 5, died August 22. He was 22 years old and lived at 40 Snow Ave., West Babylon.

## Car Pool

**CENTEREACH:** To Plt. 2, so. end. JU 8-3951.

**GLEN OAKS:** Queens to Plt. 25 or 5, 8:12-4:42 p.m. Herb Samuels, Ext. 86815.

**BRONX:** To Plts. 30, 35, 14, 15, 3, & 28. 212 CY 8-0668, after 6.

**SMITHTOWN/HAUPPAUGE:** Vic. of Rte. 111 & Smithtown By-pass to Syosset complex. 265-1249.

## Ride Wanted

**ROOSEVELT:** To Plt. 30, 7:30-4 p.m., Nassau Rd. & E. Clinton Ave. 546-7769.

## Riders Wanted

**GLEN COVE:** To Calverton, 1 rider, 8-4:30. 283-4049.

## Wanted

**APT.:** 3 rm., reason., for yg. work. couple, Sept./Oct. occup. 741-8625.

**GAS RANGE:** Used, will pick up. 234-7555.

**ENGINES:** Ignition type models, for collection. SU 5-6110.

**MISC.:** Fold up bicycle, Universal for adult; PR type crystals freq. 7970 & 7977.23 KC (KHZ). G. Russell, Ext. 9933.

**ENGINES:** Mod. plane, ignition type, used or new, for antique collection. MA 6-2825.

**HULL:** Sunfish, or comp. boat. LT 9-2908.

**AIR COND.:** 11,00 BTU wind., use 110v outlet. JU 8-3951.

**ROOMMATE:** Share furn. apt. or house w/1 or 2 other males, nr .plts. 201 826-5871.

**MISC.:** Clarinet or saxophone for beginner. AT 6-1197, after 5.

**BOWLERS:** Men only, Grumman Brown league, Tues., 6:30-9 p.m., Sept.-May. 842-4313.

**APT.:** Studio, Bethpage, Hicksville, Levittown, Syosset vic., for bus. girl, Sept. 1 occup., up to $130/mo., util. incl. MO 7-2249.

**ANT. ROTOR:** TV, reason. 757-2046, after 6.

**SEW. MACH.:** Upright Singer. 698-1928.

**MISC.:** 35 mm, 2x2 Airequit slide magazines. 261-3950.

**MISC.:** Tricycle, slight. used, & toys for child, 2-5 yr. 549-5969.

## For Rent

**ROOM:** Massapequa/Nassau Shores pvt. home, furn., pvt. bath, fem. only. 541-2076, evgs.

**TENT TRLR.:** Coleman, hdtp., slps. 6, all access., 3 day wkends, $40. 751-1256.

**APT.:** Waterfront studio, pvt. ent., Freeport. 223-0156.

**HOUSE:** Stony Brook, 4 bdrm., 2½ bath, col., w-w, firepl., xtras, 1 yr. lease. 751-8441.

**HOUSE:** Hampton Bays, 3 bdrm., furn., dinette, gar., bsmt., o.h.w., avail. Sept. thru June. 728-0913.

**APT.:** Bethpage, 2½ rm., pvt. ent., gent. pref., $150. 931-1384.

**ROOM:** Farmingdale, furn., pvt. ent. & bath, air cond., new decor. 694-6088.

**ROOMS:** 2 furn., 1½ mi. Grumman, bath, mod., air cond., carpet., sep. ent., $165/mo. incl. util., 1 mo. security. 585-5196.

**APT.:** Farmingdale, sma. furn. efficiency, air cond., immed. occup. CH 9-0023.

**APT.:** Babylon, 3½ rm., pvt. ent., air cond., new G.E. stove, Norge fridge, 1 mo. security, all util. incl. JU 7-8951.

**APT.:** Lake Ronkonkoma, 3 rm., pvt. ent. JU 5-6020.

**TENT TRLR.:** Hdtp., comp. kit., dinette, stor., slps. 7, $65/wk., $25/wkend. HA 7-7344.

## For Sale

**MISC.:** Sears Kenmore washer, full cycle, $50; match. gas dry. w/fabric temp. guide, $50. Fred Haul, Ext. 2377.

**FORD:** '69 Torino GT, 390 c.i., 4-spd., pwr. steer. & disc bks. 212 464-5641.

**COUGAR:** '70, wh., Pirelli tires, radio, 4-bbl. carb., pwr. steer. & bks., 7,000 mi., $2,800. 666-5603.

**CADILLAC:** '63 maroon Coupe de Ville, lea. int., life-time guar. on transmission, $500. 921-4382, after 6.

**TYPEWRITER:** Port. Remington, $22; '20 tbl. phonograph, $45. GE 3-5733.

**WIGS:** Strawberry blonde, human hair, $25; also brown stretch. 234-1853.

## For Sale

**ENGINE:** '64 Buick Spec., rebit., 2 yrs., 3-spd. TU 4-3345, after 6.

**BUICK:** '67 Le Sabre 4-dr. hdtp., pwr. steer. & bks., air cond., new bks., under 33,000 mi., $1,895. 543-4510.

**CORVAIR:** '63 bus, '64 eng., $125. 581-8982.

**DODGE:** '69 Polara, pwr. steer. & bks., air cond., auto., 35,200 mi., $2,000. 796-0697.

**HOUSE:** Massapequa Pk., F'dale sch. dist., all brick ranch, patio, air cond., firepl., carpet., treed, Indscpd., appli., s-s, fin. bsmt. LI 1-9070.

**HOUSE:** Pt. Jefferson Vill. sch. dist., cust. 4 bdrm. Col., 2½ bath, formal din. rm., fam. rm. w/fieldstone firepl., eat-in-kit., laundry/mud rm., 2 car gar., full bsmt., 1/3 wood. laurel acre, Indscpd., water view, s-s, xtras, low 40s. 473-5109.

**LOT:** Jennings Rd., Southhold, ¾ wood. acre, o'looks Sound, $8,500. 919 447-4717.

**EXERCYCLE:** 2-spd., $330. MO 9-7282.

## For Sale

**MISC.:** Bilt Rite twin coach carr., $30; twin stroller conv. to carr., $40. 226-3536.

**EXER. BIKE:** Pro-Am by Synder, tension adj., $20. 586-4693.

**GOLF CLUBS:** Steel shaft woods, 1, 3, & 4 w/cov., Arnold Palmer, $45. 584-5053.

**UMBRELLA TENT:** 7x7 Morsan, fl., scrn. wind./door, $15. 271-6735.

**BUNK BDS.:** Full sz. varn. pine, comp., bk. case type hd. bds., $50. MO 6-6899.

**CHRYSLER:** '63 Imperial, 4-dr. hdtp., auto., full pwr., air cond., auto. hdlgt. dimmer & ant., seeker radio, $150. 732-3553.

**OLDSMOBILE:** '64, 88, $500. 231-7381.

**ALFA ROMEO:** '69, 170cc Spider, fuel inject., 5-spd., AM/FM, garaged, $2,995. 289-5258.

**PUMP:** Deep well water, Uniflow w/all controls & plumb., Delco ½ hp hvy. dty. motor, $85/all. 744-6903.

## For Sale

**BUICK:** '63 Wildcat, 4-dr. hdtp., full pwr., auto., $500. CH 9-1641.

**VW:** '71 Super Bug, best offer. 698-2508.

**MOTORCYCLE:** '71 Harley Davidson, XLH sportster, xtra chrome, $2,195. SU 5-6063.

**MOTORCYCLE:** '69 Norton Chopper, rigid frame, 760cc, 9½ to 1 compression, 74 in. whl., $1,600. JU 7-4866.

**CAMPER:** '68 Sears dbl. decker, slps. 9, fully equip., sink, 2 burner gas stove, ice chest, cab., orig. owner, less than 3,000 mi., ask. $1,195. CH 9-7817.

**HOUSE:** Lindenhurst, 3 bdrm. ranch, w-w, s-s, cyc. fenc, xtra lrg. liv. rm. & kit. dinette, $25,500. 226-7603.

**HOUSE:** Pt. Jefferson vill. sch. dist., cust. 4 bdrm. cedar col., 2½ bath, lrg. eat-in-kit., formal din. rm., fam. rm. w/fieldstone firepl., 2 car gar., full bsmt., Indscpd., sprinkler sys., stone retain. wall, water view, low 40s. 473-5109.

**HOUSE:** Islip, cust. 3 bdrm. ranch, full bsmt., 2 bath, ctr. hall, formal din. rm., firepl., 2 car gar., porch, air cond. JU 1-2885, evgs.

**HOUSE:** Woodmere, 2 story all brick col., det. all brick gar., den, fin. bsmt., 3-4 bdrm., 2½ bath, nr. bchs., mid 40s. 295-1386.

**HOUSE:** Bay Shore 4 bdrm. hi-ranch, 1½ bath, mod. eat-in-kit., din. & fam. rm., 2 car gar., s-s, carpet., panel., appli., $28,900. 665-3943, after 5.

**HOUSE:** Dix Hills, 4 bdrm. hi-ranch, w-w, all appli., 2 car gar., s-s, FHA mtge. appr'l., $34,500. JU 6-7927, evgs.

**HOUSE:** Levittown 4 bdrm. cape, enlar. kit., porch, w-w, dutch dormers, o'sz. gar., above ground pool, $30,000. 735-1918.

**HOUSE:** Massapequa/Nassau Shores, 7 rm., 3 bdrm., 2 bath, firepl., ldry., cov. patio, gar., s-s, w-w, 5 appli., sod lawn, sprinkler, ¼ acre, prof. Indscp., nr. water, hemlock fence, $50,000. 541-2076, evgs.

**DIN. RM.:** Danish teak tbl. w/ext. to seat 12, pads, 4 chrs., 2 hd. chrs., buffet, $330; Swedish bdrm., assort. liv. rm. furn. AR 1-2421.

**MISC.:** Kit. tbl. w/ext., 4 pad. chrs., gray, $40. JU 1-3125.

**MISC.:** Comp. color TV ant. set-up, 47 elem. JFD ant. #LPVCL700V, Channel Master rotor #9512, ant. masts, guy wires, ant. & rotor hook-up wires, roof mtg. hardware, still in box, $90. James Brown, Ext. 9104.

**HOOD:** Copper range, 39 in. OV 1-7381.

**TRIUMPH:** '68, 650cc, TR-6, fully chopped except front end, new valve job & bks., $1,100. HR 2-1276.

**FURY III:** '69, pwr. steer. & disc bks., air cond., help. spgs. on rear, ask. $1,850. 938-7538.

**CORVAIR:** '63 Monza. bkt. seats, new carpet., R&H, low mi., reason. 742-0458, after 7.

**CHEVROLET:** '69 Nova, 6 cyl., auto., AM/FM, blue, 4 new w/w, snows, new bks., 50,000 mi., 22 mpg., $1,425. 212 478-6546.

**CORVETTE:** '69, 350 c.i., 350 hp, 15,000 mi., sunroof, AM/FM, pwr. wind., best offer. Terry Laterra, Ext. 3792.

**PORSCHE:** '68, 911 rac. grn., blk. int., new Koni shocks, bks., Pirelli tires, AM/FM, 35,000 mi., $4,250. 543-0044, after 6.

**PONTIAC:** '66 GTO, grn., 2-dr. hdtp., auto., cons., bkt. seats, ask. $1,100. 549-5949, after 6.

**SUNBEAM:** '53 Alpine roadster, $600. 757-1759.

**VW:** '66 blue Bug, Blaupunk AM/FM, nds. minor front end work, ask. $550. 889-4605.

**WHLS. & TIRES:** 5, 16 in. rebit. wire whls. for Jaguar XK-140 & XK-120, $10/ea.; 2, 600x16 Pirelli radials, new, $25/ea.; 2, 600x16 Pirelli snows, used 1 season, $10/ea.; 1, 600x16 Pirelli reg. tire, $10. 587-1864.

**MOTORCYCLE:** '67 Triumph 500cc, ext. front, Zman handlebars, 2,800 mi., $700. TU 8-3114.

**VW ENG.:** '61, 40 hp, comp. rebit. & instal., $150. 273-5309.

**SUZUKI:** '71 Stinger 125, under warr., $425. WE 5-3179.

**SAILBOAT:** 14 ft. Bluejay sloop, dac. main & jib, nylon spinnaker, 3 hp Evinrude outbd., trlr., fully equip., rdy. to sail, $550. 368-6038.

**BOAT:** '70 Thunderbird formula jr., 17 ft., 85 hp Evinrude, full canv., bit. in gas tanks, $2,200. 587-9553.

**SPORTS FISHERMAN:** '61, 30 ft. Pacemaker, 225 hp Gray marine, flybridge, S/S, depth find., compass, Bimini tp., slps. 5, fully equip. 751-3652, after 6.

**HOUSE:** West Islip, 7 rm. split, 3 bdrm., 1½ bath, ¼ acre, panel, playrm., all appli., att. gar., prof. Indscpd., patio, nr. sch., shops, & churches, immed. occup., prin. only, $32,000. JU 7-0346.

# at your SERVICE

**This is a free service to Grumman personnel for non-commercial advertisements, accepted on a first-come, first-served basis. Classified advertisements are carried in PLANE NEWS only on the basis that everyone replying to such advertising will receive fair and equal consideration regardless of their race, creed, color, or national origin.**

**Type or print ad on form available at Employees Service and Engineering counters, and send via interplant mail to PLANE NEWS, Plant 5, Bethpage. List home phone (with area code if outside Nassau or Suffolk). Limit: one ad per person per issue. No item under $10, no firearms or ammunition.**

**PUPPIES:** Irish setter, Amer.-Canadian champ., gd. blood lines & temper., all shots, AKC, $200. MO 9-7906.

**PUPPIES:** St. Bernard, male & fem., $100/ea., AKC. 234-5785.

**PUPPIES:** Blk. std. Schnauzer, AKC, 8 mo., fem., $150/ea. 215 777-6992, before 1 p.m.

**PUPPIES:** Irish setter, AKC, shots, champ lines, fem. & male, $75-$100. EM 3-6451.

**PUPPIES:** Boxer, AKC, champ sired, housebkn. OV 1-7381.

**GREAT DANES:** AKC, some shots, ears crop., blk. & wh. harlequin fem. $250, grey & blk. Merle male, $100. 585-1692.

**BOAT:** '69 Sea Ray, 18 ft. fbgl. w/55 hp, walk thru windshld., full canv., xtras incl. summer dock., $1750. 587-8206.

**BOAT:** '64, 21 ft. Grady wh., cab., '68 Johnson 100 hp, conv. tp., side curt., covs., slps. 2, sink, hd., spotlgt., compass, elec. bilge pump, 24 gal. fuel cap., in water, $1,900. 979-0839, after 6.

**CAB. CRUISER:** '68 Winner, 75 hp Chrysler, tandem whl. shipmate trlr., S/S, depth find., compass, 18 ga. stain. steel gas tank, xtras. 751-7251.

**CLAM GARVEY:** 16 ft., new. LT 9-0179, after 5.

**BOAT:** '69 Winner Minaiki fbgl., 18 ft., 120 hp Mercruiser in./outbd., fully equip., $2,700. 799-5945.

**CAB. CRUISER:** 22 ft., slps. 3, '57 Owens 100 hp inbd., $825. 277-0840.

**OUTBD. MOTOR:** '68 Evinrude 40 hp Lark selectric pushbtn. shift, lg. shaft, comp. w/controls & gas tank, under 100 hrs., will demon., $495. 864-3703.

**OUTBD.:** 3.9 hp, '68 Mercury w/tank, $140; 10 ft. alum. boat, oars, locks, lgts. & anchor, $75; Kenmore fully auto. washer, $10. 864-5349.

**SAILBOAT:** 19 ft., '68 Corinthian fbgl. keel sloop, 2 bunks, hd., outbd., well, dacrons, $2,500. 421-9336.

**DRUMS:** 5 pc. Rogers set w/dyna-sonic snare, 5 cym., hi-hat, all access., $500. 586-7158.

**MISC.:** Outdr. chaise lounge, $10; set of 3 scrolled alum. patio posts, 7 ft. 2 in. hi., $20. 277-1971.

**SCAFFOLD:** 5 steel 4x4x7 sets, $75. AN 5-4940.

**MISC.:** '69 G.E. refrig., $125; crib, $25; hi-chr., $10; play pen, $10; 19 in. Magnavox TV w/blond cab., $45. WE 1-7309.

**MISC.:** Hansen 50/50 surfbd., 9 ft. 8 in., remov. skeg, hand paint. design, roof racks, wet suit, $100 or best offer; 2, 14 in. tires, $10. 567-2416.

**TENNIS RACKET:** Spalding smasher alum., vantage strung, never used, $20. 665-7985.

**MOTORCYLE:** Harley-Davidson XLCH cust., mold. frame & tank, ext. front end, chrome access., ask. $1,775. FR 9-8062.

**MISC.:** Jacobson lawnmower, 2 cyc., can be used for go-cart or mini bike, $10; 2 beer dispenser, stain. steel tps., 4 beer tps. w/water faucet, $10/ea. A. Adessio, Ext. 1334.

**MISC.:** Camera case, 8x10x5, lrg. & sma. zipper compart., strap, $15; fold. metal tbl., 3x6, $15; bathroom cab. slid. mirror drs., 18x28, $15; round piano stool, 10 lb. vise, maple hat rack, 4 lb. anchor, 29 in. dia. mirror, other items. 751-1327.

**MISC.:** Stereo hd. phones, Koss pro 4A, $35; Heathkit hdphone control unit, mod. AC-13; Tiffany sterling cigarette case, $75; Grundig Niki port. tape record., $30; Karastan oriental rug, Bokhara, 9x12, underpad, $350. 543-1089.

**MISC.:** Aeolian baby grand piano, $500; Navy surplus 5 band SW radio, $20; 7 pc. import. Danish bdrm. set, $550; wal. Danish din. rm. tbl. w/6 pad. chrs., $150. 433-8631.

**MISC.:** 6 stain. steel triangles w/case, 4 to 12 in., 45° & 30-60°, $75; 3 Starrett metal rules w/case, 6 in., 12 in., & 18 in., 100ths & 64ths, $15. 423-5416.

**SHOE REPAIR EQUIP.:** Fin. mach. & access., prof. hat clean. equip. & access., $400. 437-9052.

**PLYMOUTH:** '70 Duster, auto., pwr. steer., air cond., 11,000 mi., carpet., $2,300 or best offer. 433-8631.

**CORVETTE:** '63, 340 hp, 3.70 posi, 2 tps., pwr. wind., AM/FM, alarm, low mi. 589-3383.

**VOLVO:** '67, 122S, FM/AM stereo, auto., $1,250. 433-3325.

**VW:** '70 Fastback, red ext., AM/FM, new tires, clutch, 18,000 mi. under warr. EV 1-3078, evgs.

**CHRYSLER:** '67 Newport, 4-dr. sed., air cond., pwr. steer. & bks., $1,395. 893-1433.

**VW:** '67 sed., $875. 868-3566.

**OLDSMOBILE:** '65 Delta 88, 4-dr. hdtp., air cond., pwr. steer. & bks., wh., $800. ED 4-6423.

**VW PARTS:** New carb. for '66/'67 Fast or Squareback type III, $40; 2 new fuel pumps for mod. 1200 & 1300, $10/ea. WE 1-8175.

**MOTORCYCLE:** '70 Honda, 175cc, $475. J. Caselles, Ext. 57-456.

**CLOCK:** Grandfather w/moon dial, circa 1790, $450. HR 3-3232.

**VOLVO:** '70 mod. 1800E, AM/FM, burglar alarm, o'drive, 9,500 mi., $3,500. 212 421-7296.

**HOUSE:** Jericho location, 3 bdrm. split, 1½ bath, ¼ acre, Indscpd., $37,500. 724-5989.

**BABY CARR.:** Bilt-Rite coachette, reason. 212 479-0509.

**DRUMS:** Beginner's set, comp., $45. 868-9039, after 5.

**WIND. FAN.** 20 in., 3-spd., elec. reversible, in orig. box, $10. Haig Manoogian, Ext. 2708.

# Apollo comes of age, says Scott, in assessing lunar mission

A lot has been said about the "genesis rock"—which may date back to the original crust of the moon—and perhaps that may turn out to be the most prized rock ever brought back to earth by astronauts.

But the scientific coup (at least for the moment) should not obscure other real and significant achievements and observations made by the moon treaders, Dave Scott and Jim Irwin, and by the lonesome moon orbiter, Al Worden:

- Scott and Irwin proved that the lunar-roving vehicle (described once as a "bucking bronco") can travel on the moon's surface
- The men of LM, for the first time, had three EVAs (Extra Vehicular Activities) instead of two EVAs and each spent about 20 hours on the moon
- Worden spotted a large area of cinder cones or dead volcanic craters, indicating that volcanic activity may have been present longer than previously thought
- Scott and Irwin recorded the unexpectedly rounded contour of the Apennine Mountains, the "layered" pattern of rocks, and the "completely clean" rock fragments of distinct colors
- The moon walkers' comment that lunar dust was pungent and had the odor of gun powder.

### Lunar lift-off

For earth-bound viewers, perhaps the most pleasantly surprising moment came when the men of Falcon (the LM) lifted off from the moon. A TV camera mounted on Rover 1 showed the astonishing speed of liftoff. "Pop! and it was gone," said one viewer. Then came the strains of the Air Force hymn, "Off we go. . . ."

Even though the Apollo-LM journey was a picture flight, it did not go off without glitches. A battery problem was corrected just before liftoff from Cape Kennedy; an outer glass instrument panel meter was broken, but an in-flight sweep up kept the mission on go; an Abort Guidance System alarm went off during liftoff from the moon, but investigation showed there was nothing to be alarmed about; a suspected cabin leak in the Command Module caused concern, but after an extra orbit of the moon confirmed there was no leak, the men jettisoned the Lunar Module and began their trip back to earth.

### Smooth mission

So, in the final analysis, no substantial glitches—no "show stoppers"—occurred. In fact, the mission was remarkably smooth. There were few glitches (anomalies). Vice President Tom Kelly, who was at Mission Control, Houston, during the flight, remarked proudly of the virtual absence of anomalies; and when the PDI (Power Descent Insertion) showed no anomalies, he quipped "That alone is an anomaly." Nor was that the only humor: Scott, during staging, said it sounded "like a train wreck!" The "bucking bronco" reference to Rover 1 set off a titter (although Scott thought the ride was good).

In a more serious vein, the crystalline "genesis rock" that Scott and Irwin found and brought back to earth (along with 175 pounds of rocks) is expected to provide clues as to how (and when) the moon and earth were formed—indeed, how the universe was created. Delighted scientists will be spending months or even years in examination of the rock. It seems, though, that the nature of the find itself has confirmed to many scientists the "how" of the moon's development: That some 4.6 billion years ago, at the same time as the birth of the earth, it "condensed" from gas and dust. Of course, that hypothesis mandates the existence of a cloud of some sort; so we are not back to "the beginning."

(One matter stands out rather clearly, however: The chances of finding such a thing as the so-called "genesis rock" would be remote if only an unmanned scoop were used. It's a powerful argument for manned missions, in which man's judgment is brought into play at the scene.)

Although more was done during this mission than on any previous mission, mainly because of the Rover (though it lost a fender somewhere along the way), and almost all the objectives were met, the flavor of what went on has been said best by the astronauts:

The Apennine Mountains came as a surprise to Irwin. They weren't brown or gray but, at first sight, "they were golden. Looking to the south and east, I saw the reflection of the early morning sun glancing off the mountains, especially Hadley Delta, giving them a glow of gold.

"It seemed like a friendly place. . . ."

And he commented that "Each night, when we bedded down in our hammocks . . . I would lie awake for a few minutes and reflect on the beauty of what I had seen and try to etch in my mind a lasting impression of the majesty of those mountains."

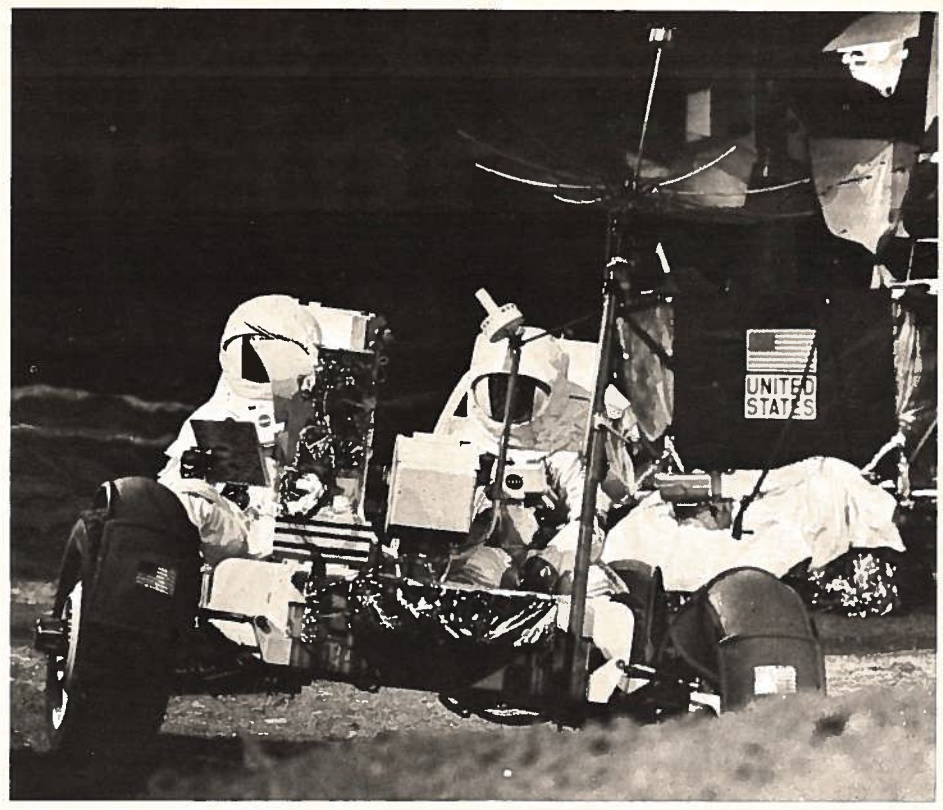
For Worden, who made 74 orbits of the moon while his two companions were on it, there were "visual surprises," and he mentioned being on the dark side of the moon:

"The only way I could know that the moon was down there at night was to look out at the field of stars." And he added:

"You sort of lose the sense of reality of being in lunar orbit when the moon is dark like that. You could be anywhere."

Although Scott said his most exciting moment came as he and Irwin drove up Hadley Delta, perhaps his greatest long-term satisfaction was, as he said, "I think we witnessed the maturity of the Apollo system."

But the tone of 12-day adventure went far beyond the Apollo 15 LM-10 mission itself. As Scott pointed out, something symbolic took place there on the moon: The crew left a metal memorial there, one inscribed with the names of the 14 American and Soviet spacemen who've died since the manned missions began 10 years ago.




**Plant 4's 'moon'.** **Consulting pilot Scott MacLeod and engineer Charlie Smith drive working model of Rover at Plant 4 simulating real action on moon. (Photo by Fred Annette)**

# Inouye sees aerospace industry as vital to nation

*(Continued from page 1)*

was signed has changed drastically—that is, the estimated rate of inflation."

He observed:

"Even the best economists of that time were unable to foresee the inflationary spiral we have been witnessing. As a result, the Company has requested a restructured contract and adjustments in costs. How has the Government reacted? In essence, we have told Grumman that we think we can force them to fulfill the contract as it stands, even though we know we will be pushing them down another difficult financial path which in another two or three years could lead them to request financial assistance. In effect, we are telling them that we do not care—we want those airplanes. We should thank God that we have a defense producer like Grumman with the financial integrity and guts to put us on notice well in advance of any crisis." (This is a reference to President Bill Zarkowsky's "inflation alert" letter to the Navy on March 30, 1971, which followed an earlier notification by Lew Evans.

The Senator made it clear that he wasn't for the aerospace industry "right or wrong," nor was he insensitive to the problem of costs. He was trying to put things in proper perspective: National defense and the reservoir of technological capability are essential, and costs (in his words) "are 'fixable.' " He took the high road, calling for "intelligent dialog, legislation, and revision of the kind of obsolete procurement procedures that have caused a large share of today's defense problems."

### Beneficial to economy

He talked, too, of his conviction that a fair profit should accompany a "creditable job" for the Government. He said that helped the nation in several respects, including employment, increased tax revenues and gold flow—the keys to a stable economy. "But—most important of all—we will benefit," he said, "from the production of capable weapon systems for the defense of our country."

Of course, there are some who believe that an updated F-4 could do the defense job for far less money. He thought that to be ridiculous—like racing a 1955 automobile at Indianapolis in 1972. As for the F-4, he said that Tomcat "offers twice the range and the combat performance of the latest model of the F-4."

While granting that faults lay on both sides of the fence, the Government and the aerospace industry, he saw no future in assessing blame. Rather, he called for "mature and statesmanlike" behavior, a dedication not to the next election but to "the next generation."

He capped his remarks by saying that "we must, I believe, provide the means for this industry's survival. It may also mean our Nation's survival.

"I ask that we embark on an all-out effort to solve the difficulties confronting us in this situation. Let us seek more constructive answers than those which currently range between annihilation and economic despair, and find ways in which we can protect and propagate the industry's technological resources which we do desperately need, while achieving the economically efficient levels at which we can continue to produce and advance.

"In brief, let us concentrate our collective efforts on fixing the problem rather than in a continued, futile attempt to fix the blame."